1304-11

HAND BOOK OF BUILDING MAINTENANCE

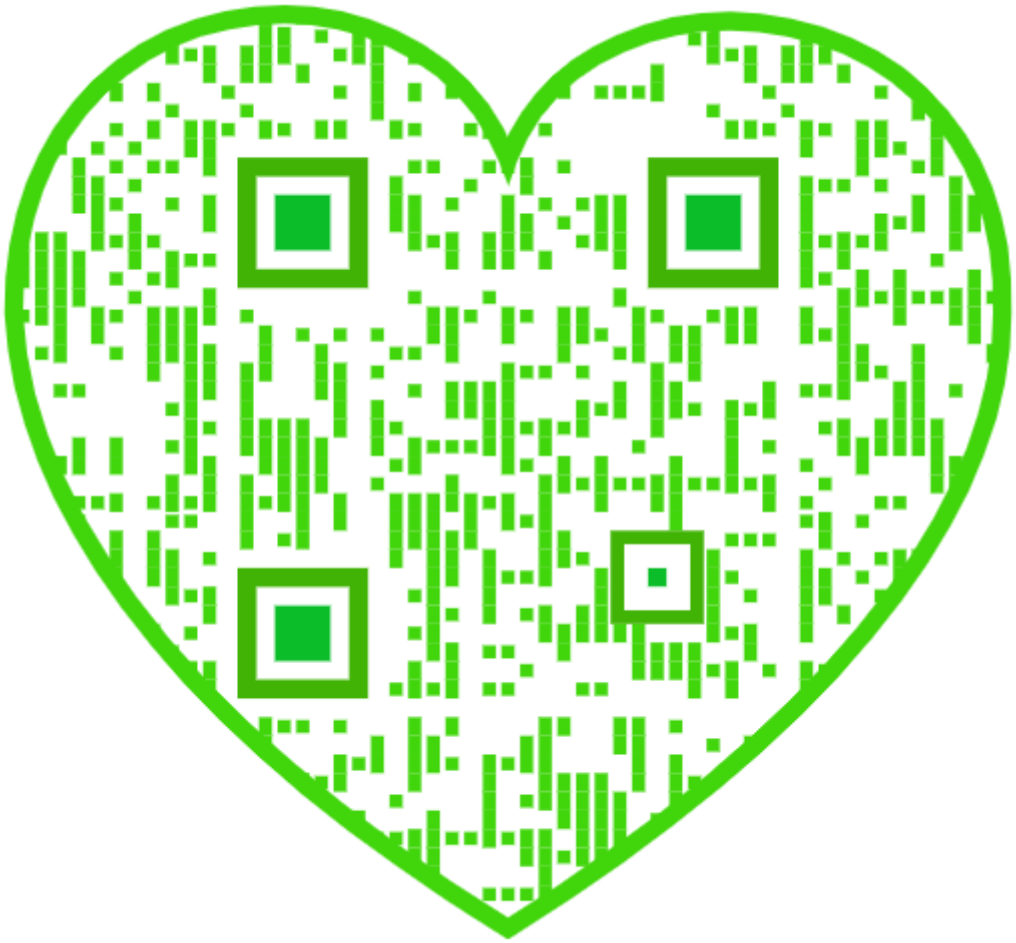
Anywhere in U.S.A.

BOSTON
PROVIDENCE
NEW HAVEN
ALBANY
ROCHESTER
NEW YORK
PHILADELPHIA
PITTSBURGH
BALTIMORE
CHARLESTON
GREENSBORO
ATLANTA
MEMPHIS
BIRMINGHAM
CLEVELAND
AKRON
DETROIT
CINCINNATI
INDIANAPOLIS
CHICAGO
KALAMAZOO
MILWAUKEE
MINNEAPOLIS
ST. LOUIS
PEORIA
DES MOINES
DALLAS
NEW ORLEANS
HOUSTON
JASPER
SALT LAKE CITY
DENVER
SEATTLE
LOS ANGELES
SAN FRANCISCO

FLOORS - ROOFS - WALLS

Ready reference for men responsible for the maintenance of Industrial Buildings and Structures. Should be on file in every engineer's office in every type of Industrial Plant, Railroad, Institution, Motor Car Service Station Company, School Board and Government Agency.

FLEXROCK COMPANY
23rd & MANNING STREETS
Philadelphia, Pa., U. S. A.



1304-11

JUN 23 1941

Fourth Edition

INTRODUCTION

The tremendous demand for a Hand Book of Building Maintenance indicated by the quick circulation of 60,000 copies of the FLEXROCK Hand Book, requires that another edition be printed.

95% of these 60,000 copies already in circulation were requested individually by engineers in industrial plants, superintendents, presidents of school boards, superintendents of school boards, managers of institutions, railroad engineers, and thousands of others in responsible positions where the maintenance of buildings is a major problem.

With the knowledge that these books are appreciated, it is a pleasure to have the FLEXROCK Staff of Engineers and Chemists develop this fourth edition of the HAND BOOK OF BUILDING MAINTENANCE for the benefit of those men interested in our work.

It is the endeavor of this book to provide practical and economical solutions to a number of building maintenance problems. The suggestions, solutions, and materials explained and described have all been tested and have been proven practical.

It is a pleasure to furnish this book with the hope that it will prove to be a valuable reference book in YOUR EVERY-DAY MAINTENANCE WORK.

FLEXROCK COMPANY

Copyright 1940—Flexrock Company

FRANKLIN INSTITUTE
PHILADELPHIA

H-4804

Printed in U. S. A.

STEPS - SIDEWALKS - FLOORS
ROOFS - WALLS - FOUNDATIONS
all present PROBLEMS

A problem is not something to be "shot at" in hit or miss fashion. Every problem has its logical and practical solution. Modern materials and methods of construction require specialized attention to accomplish the maximum results in solving building maintenance problems at a minimum of cost.

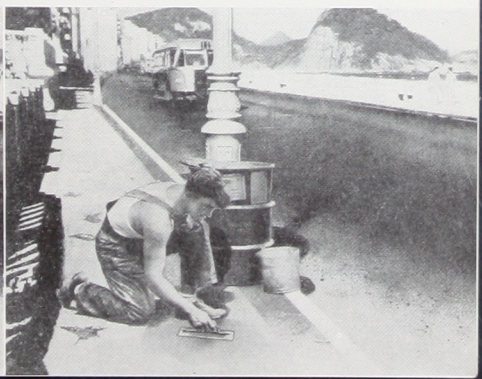
To rely upon out-of-date information or haphazard experimentation is to invite heavy costs and needless depreciation. Therefore, the purpose of this book is to aid in a sincere presentation of facts concerning known problems so that they may be solved with the greatest satisfaction and at the lowest cost.

Steps of every kind and description, especially in the thousands of schools throughout the United States present a grave problem. Thousands of children's feet shuffling across the treads quickly wears many types of surfaces. The proper material for step treads may vary under different conditions. However, actual use, under many years service in the case of schools, railroads, and public places, has proven that RUGGEDWEAR RESURFACER is one of the finest products for this purpose that can be obtained. Yet, it is very economical.

Under severe conditions such as the Atlantic City Boardwalk pictured above, one faces even graver problems. When an engineer feels the responsibility of his position, he realizes that a splinter in a floor, a broken place or hole in concrete, or any other defect in a floor surface might cause a serious accident. The more people involved, the greater the possibility.

It is with sincere appreciation for the many problems involved in broken floors, leaky roofs, foundation walls, slippery floors, damp-proofing and water-proofing and with complete respect for the excellent judgment and abilities of trained engineers, that suggestions and solutions to these many problems are offered in this book.

Below are two photographs. One depicts the old method of repairing concrete and the other pictures the new. This photograph of the old method was taken in a country abroad where labor cost is very low. For this reason, suppose we assume that each of these four men receives 10c per hour. If they do this job in four days, it costs $12.80. At $1.00 per hour, an American workman will do the same job at an approximate cost of $4.00. The difference is modern materials and modern methods.



PROBLEM INDEX

A

Page

Accelerating set of concrete . . . . . 26 & 41
Acid and alkali tests on floor dye 25
Acid and alkali tests on GLASFLEX 33
Acid resistant coating 33
Acid resistant floor coating . . . . . 24, 25 & 33
A dollar saved is a dollar earned 19
Aeroplane type colorless waterproofing 44
Aisles in factories 13
Alkali resistant coating 33
Aluminum tanks and stacks 58
Analysis of roof coating compositions 46
Application of COLORFLEX 25
Application of FLEXROCK 30
Application of FLEXROCK NON-SLIP WAX 35
Application of FLEXSEAL 44
Application of LONGLIFE 52
Application of ROOFLEX 56
Asphalt emulsions 65
A treatise on asphalt emulsions 65

B

Barrels on chimes 18
Beautiful new effects over old wood floors 30
Branch offices . . . . . Back cover

C

Caulking around windows 61
Cement and aggregates 64
Cement, sand and stone required with RUGGEDWEAR 15
Changes of temperature regarding roofing 54
Clean and bleach dingy wood floors 63
CLEANBRITE 62
Cleaning paint compared with repainting 62
COLORFLEX . . . . . 21, 24 & 25
Colors of COLORFLEX 24
Comparative costs of concrete patching materials 4
Comparison of floor repairing and resurfacing materials 4
CONCRETDENSE . . . . . 26 to 29
Concrete nails 21
Correction of common floor difficulties 23
Coverage and quantities of materials (RUGGEDWEAR) 15
Coverage capacity of FLEXROCK WAX REMOVER 36
Coverage for estimating PATCHROAD . . . 60
Coverage of Aluminum 58
Coverage of COLORFLEX 25
Coverage of FLEXROCK 31
Coverage of FLEXROCK NON-SLIP WAX 35
Coverage of FLEXSEAL 44
Coverage of FLEXTITE 43
Coverage of FLINTCRUST 32
Coverage of GLASFLEX 33
Coverage of ROOFLEX 56
Coverage table ROXITE 16
Curing and finishing RUGGEDWEAR RESURFACER 12
Curing CONCRETDENSE 29

D

Damp-proofing 43

Page

Dangerous falls on slippery floors . . . . 34 & 35
Durable floor installations aggregate 16
Dye for floors . . . . . 24 & 25

E

Electric float on RUGGEDWEAR 20
Engineering service . . . . . 67 & 68
Engine rooms . . . . . 21, 28 & 29
Estimating quantities material for RUGGEDWEAR installation 15
Estimating table ROXITE 16

F

Fabric membrane 57
Factories, Railroads, Service stations use RUGGEDWEAR 6
Fire resistant coating 33
FIRMFLEX 37
FLEXROCK . . . . . 21 & 31
FLEXROCK NON-SLIP WAX . . . . . 34 & 35
FLEXROCK WAX REMOVER 36
FLEXROCK the world over 66
FLEXSEAL 44
FLEXTITE . . . . . 40 to 43
FLINTCRUST 32
Floor hardener, iron 37
FLOORNEW 63
Floors and wearing surface materials . . . 5 to 38
Floor surfaces for wax application 34
Foundations and construction 26
Foundation waterproofing 53

G

Geographical area served by FLEXROCK COMPANY 66
Gilsonite asbestos asphalt roof coating 54 to 56
GLASFLEX 33
Gloss on floors without skid 35
Guarantee . . . . . Back cover

H

Hardening concrete floors 32
Hard surfaced roof coating . . . . . 50 to 53
HI-TEMPERATURE ALUMINUM 58
How to stop leaks while they are leaking . . 40

I

Important precautions and suggestions on "step problems" 7
Importance of quick repairs in rushed factories 17
Installation of CONCRETDENSE . . . 28 & 29
Instructions for CLEANBRITE 62
Instructions for PATCHROAD 60
Instructions for RUGGEDWEAR repair 8
Iron floor hardener 37
Iron waterproofing 37

K

Knowledge of aggregates important in concrete work 64

L

Logic of a RUGGEDWEAR repair 10

PROBLEM INDEX

Page

LONGLIFE . . . . . 49 to 53
LONGLIFE—ROOFLEX combination roof 57

M

Maintenance of buildings 1
Material per thousand square feet RUGGEDWEAR RESURFACER 15
Measuring roofs 48
Mechanical drawings of types of floor construction 22
Mixing FIRMFLEX with semi-mastic materials 37
Mixing proportions RUGGEDWEAR RESURFACER . . . . . 8, 9 & 11
Modern concrete grade crossing 14
Mold a sanitary cove base 19

N

New life to old felt and paper roofs 55

O

Oil resistant floors 27

P

Paint cleaner 62
Patching concrete . . . . . 6, 8 to 17
PATCHROAD for roadway repairs 60
Penetrating dye for floors . . . . . 24 & 25
Permanent floors . . . . . 26 to 29
Plastercoat beams, columns and walls, make them waterproof 41
PLASTICSEAL for caulking 61
Polishing FLEXROCK floors 21
Production installation of enormous areas of floor 20
Profitable suggestions in plant maintenance . . . . . 18 to 21

Q

Qualities of ROOFLEX 55
Quick repairs under strain of peak production 17

R

Railroad track insulation 14
Railroads use RUGGEDWEAR RESURFACER 14
Recommendations of FLEXROCK MATERIALS 69
Recommended use of roofing best suited for respective roofs 47
Reconstructing concrete ceiling beams 41
Rehabilitating concrete slabs 23
Reinforcing concrete slabs 18
Removal of wax imperative 36
Repairing concrete with RUGGEDWEAR RESURFACER 8
Research laboratory 68
Resurfacing wood floors 12
ROCKFLUX for wet floors 37
Roof discussion 47
ROOFLEX . . . . . 54 to 57
Roof materials . . . . . 45 to 58
Roof patching combination 55

Page

Roofs . . . . . 1, 45 to 58
ROXITE 16
RUGGEDWEAR "duckboards" 19
RUGGEDWEAR installed on production basis 20
RUGGEDWEAR, manufacture of 6
RUGGEDWEAR repairs on steps 7
RUGGEDWEAR warm to the feet 19

S

Seepage and damp-proofing 43
Service station repairs 6
Setting semi-mastic floors in twenty hours . 37
Setting Steel plates 19
Shipping weights of Aluminum 58
Shipping weights of CLEANBRITE 62
Shipping weights of COLORFLEX 25
Shipping weights of FLEXROCK 31
Shipping weights of FLEXROCK NON-SLIP WAX 35
Shipping weights of FLEXROCK WAX REMOVER 36
Shipping weights of FLEXSEAL 44
Shipping weights of FLINTCRUST 32
Shipping weights of FLOORNEW 63
Shipping weights of GLASFLEX 33
Shipping weights of LONGLIFE 53
Shipping weights of PATCHROAD 60
Shipping weights of PLASTICSEAL 61
Shipping weights of ROOFLEX 56
Shipping weights of RUGGEDWEAR 15
Sidewalks 1
Simple logical suggestions for greater economy 38
Special problems 68
Special products made to order 68
Specifications for LONGLIFE roofing 52
Steel grid installation . . . . . 18 & 20
Steel wool in doughnut form 21
Steel wool used with disc floor machine 21
Steps—wood, concrete, marble, etc. . . . . 1 & 7
Streamlined service 67
Surface hardener for concrete 32
Surface water carried by sand and stone . . . 64

T

Technical details of patching concrete floors 11
The perfect roof 57
The use of PLASTICSEAL 61
Things not to do 38
Trial offer . . . . . Back cover
Types of floor construction 22
Types of workbenches 21
Twenty hour floors 37

U

Unique steel trowel 31

W

Warehouse stock locations . . . . . Back cover
Waterproof floors . . . . . 18, 26 to 29, 37
Waterproofing foundation walls . . . . . 40 to 43
Waterproofing with powdered iron 37
What is RUGGEDWEAR RESURFACER? 6

COMPARISON OF FLOOR REPAIR AND RESURFACING MATERIALS

The comparison of materials below is based upon types and not trade names. Any one of a dozen trade names may be applied to any of these basic products.

The expert presenting this comparison has had experience with every one of these types.

Key
- #1—Soap & Asphalt Base
- #2—Montmorillonite-Cellulose-Asphalt Base
- #3—Clay Asphalt Base
- #4—Clay-Asphalt-Sand pre-mix
- #5—Clay-Asphalt Base—Sand-Cement Units
- #6—Chemical-Clay-Asphalt Base

FLOOR RESURFACER	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Approximate Price per lb.	20c	15c	7½c	10c	6¼c	20c
Coverage per sq. ft.	⅓ lb.	⅔ lb.	1⅓ lbs.	4 lbs.	5 lbs.	¾ lbs.
Approximate Cost per sq. ft.	6⅔c	10c	8⅓c	40c	31¼c	15c
Affected by moisture	Yes	Yes	Yes	Yes	Yes	Yes
Characteristics under heavy loads	Dis-integrates	Withstands	Squishes out (pan-cakes)	Squishes slightly (soft)	Squishes slightly (soft)	Withstands
Seller has direct control of manufacture	No	Yes	Yes	No	No	No
Resilience (shock-absorbing)	Too hard	Very Good Reason—Cellulose	Much too soft	Too soft	Too soft	Good Too hard
Smooth surface	Rough	Smooth and Level	Gets wavy	Smooth to wavy	Smooth to wavy	Smooth and Level
On market (part of year counted as whole)	4 years	7 years	20 years	1 year	5 years	19 years
Toughness under abusive traffic	Poor	Excellent	Poor	Fair	Fair	Good
Approximate place in American industrial sales volume	6	1	3	5	4	2
Export sales	0	3	2	0	0	1
Patch to feather edge	Bad	Excellent	Poor	Good	Good	Good

#1. This type of material must be mixed with such a volume of sand and stone to give it the necessary "stability" for industrial service that the "cementing" or "binding" element is not sufficient to hold the aggregate together for more than approximately 3 months.

#2. This product is harder because it is made with Montmorillonite, basically composed of iron, silica, manganese, and alumina. It is also processed with Cellulose which provides greater TOUGHNESS. It has no obnoxious odor. It has no extra water and no sand mixed with it in the barrel.

#3. This type is made on the original clay patent. Its cost is naturally low because it is not modern, no improvement.

#4. This is a combination of #3 with the addition of sand and water. It is still necessary to add the cement, which is more difficult after the sand is wet. This "pre-mixed" idea is an excellent excuse for charging 8 cents to 12 cents per pound for sand and water.

#5. This type is essentially the same as #4. The difference lies in not mixing the sand with the other material and, in addition, furnishing the cement, all at a unit price of about 6¼ cents per lb. Cement and sand may be purchased much cheaper.

#6. This type by test does the second best job. It is a chemical base and does not have the stability of a Montmorillonite material. It is not as tough because no cellulose is used. It has an odor. But it still does a good job.

NOTE: Instead of using "pre-mixes" or "unit combinations," a lower cost is obtained and much better results are derived by mixing standard Portland cement, ROXITE for aggregate, and any of the above resurfaces,—except #4 and #5, of course. With the quantity of water specified, this cannot vary and always produces definitely "tough" floors.

Portland cement is uniform—ROXITE is uniform—The Resurfacer is uniform—Add a uniform quantity of water and your results will always be uniformly good. It is usually the sand or the quality of the resurfacer that varies the result. Use a GOOD resurfacer and ROXITE to make sure of GOOD RESULTS.

FLOORS
&
WEARING-SURFACE
MATERIALS

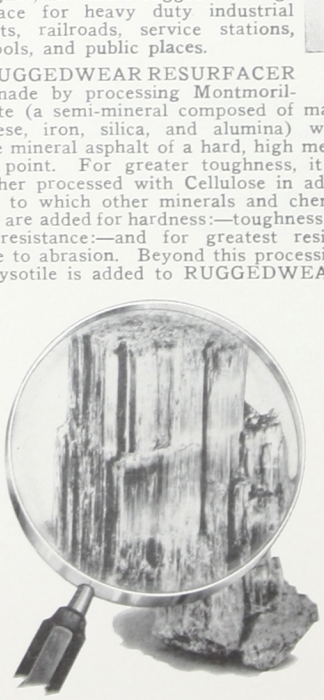
FACTORIES RAILROADS SERVICE STATIONS USE RUGGEDWEAR RESURFACER

A Tough Material for Tough Jobs

WHAT IS RUGGEDWEAR RESURFACER

It is a product for the purpose of providing a firmer, smoother, tougher, and more rugged wearing-surface for heavy duty industrial plants, railroads, service stations, schools, and public places.

RUGGEDWEAR RESURFACER is made by processing Montmorillonite (a semi-mineral composed of manganese, iron, silica, and alumina) with pure mineral asphalt of a hard, high melting point. For greater toughness, it is further processed with Cellulose in addition to which other minerals and chemicals are added for hardness:—toughness:—fire-resistance:—and for greatest resistance to abrasion. Beyond this processing Chrysotile is added to RUGGEDWEAR.



Montmorillonite, as the original base of RUGGEDWEAR RESURFACER, gives it hardness and adds a fluffy nature which decreases its specific gravity in process and, therefore, provides a considerably greater coverage capacity than other floor repair materials.

The reprocessing conditions RUGGEDWEAR for the specific purpose of providing an unequalled, tough wearing-surface. The Chrysotile added in this reprocessing adds even greater toughness and, at the same time, actually decreases the specific gravity so that still greater coverage is obtained by using RUGGEDWEAR RESURFACER.

CHRYSOTILE is a fibrous material which comes from a natural rock. It consists of long, hard, tough fibres which are acid-resistant, absolutely waterproof, will not rot nor disintegrate regardless of age. This product in the process known as "fibration of RUGGEDWEAR" is far different from the wool shoddy, rag fibre, cotton linters, soya beans, or ordinary asbestos fibre used in some seemingly similar products which might also be fibrated even though not reprocessed.

RUGGEDWEAR RESURFACER is used with Portland cement and sand—Portland cement and ROXITE—Portland cement, sand and stone—or cement, ROXITE, and crushed stone. RUGGED-

IMPORTANT PRECAUTIONS AND SUGGESTIONS ON "STEP PROBLEMS"

WEAR RESURFACER may also be mixed with sawdust—ground cork—magnesium oxychloride cements under certain conditions and for specific purposes.

MIXING:—For all ordinary purposes, RUGGEDWEAR RESURFACER may be turned over with shovels, the same as in mixing any ordinary concrete. Add the *least amount of water possible* as long as you obtain a workable mortar. Always continue turning the mortar over until *all streaks are removed* and it becomes a smooth, even color.

On large jobs, it is often mixed in a power mixer. In this case, mix your material 3 to 5 minutes to the batch.

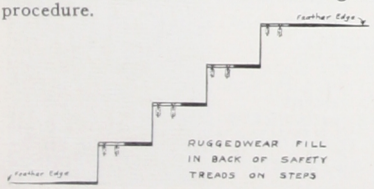
In mixing or applying RUGGEDWEAR, you must use the same care as in applying concrete. In cold places with the temperature below 32° F., do not install it. The water that you mix with RUGGEDWEAR RESURFACER will freeze.

Under all temperatures above 60° F., you should place wet bags or clothes over your RUGGEDWEAR installations as soon as the "set" has taken place. This avoids shrinkage cracks from rapid evaporation of moisture.

RUGGEDWEAR RESURFACER is simply mixed like ordinary concrete and is applied with a float and a trowel. It is smoothed off with a trowel and in all instances the edges are sealed by painting over them with RUGGEDWEAR PRIMER.

PREPARATION OF QUESTIONABLE CONCRETE. In many instances the concrete surface is questionable. It may be sort of "powdery"—probably has been affected by grease—or possibly insufficient cement was used with it and it has started to sand off.

The first step necessary in preparing such a concrete surface for any repairs if you are to do a successful job, is to thoroughly saturate the old slab with a thin solution of your bonding material. Make sure that this bonding material penetrates and will not pull off. After you have penetrated the surface and you are sure that your bonding material will stay there perfectly, you are then ready to go ahead with the regular application of RUGGEDWEAR in accordance with the regular procedure.



The bonding coat in the case of RUGGEDWEAR would be RUGGEDWEAR PRIMER. Instead of making a solution of 1 part water with 2 parts PRIMER, just reverse the procedure and use 2 parts water with 1 part PRIMER. This should penetrate a considerable distance into the concrete.

WHERE TO USE IT. Use RUGGEDWEAR on concrete either for patching or for resurfacing entire floors—regardless of how heavy traffic may be. It should not be used under moisture, wet conditions, oils, or acids. RUGGEDWEAR RESURFACER is not "oil proof" or "acid proof."

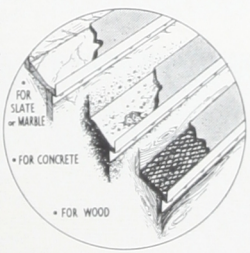
RUGGEDWEAR may be used outdoors or indoors—over concrete, wood, wood blocks, metal, bricks, or stone surfaces. It may also be used in conjunction with steel or iron floor grids.

It is often used for sound deadening, as a floor resurfacer—or as insulation under floor coverings. It is used for patching factory floors, making new aisles or resurfacing entire floors with a ½" or ¾" tough wearing surface.

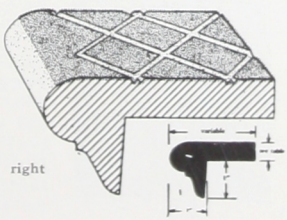
RUGGEDWEAR is also used for leveling linoleum and other floor coverings—for expansion joints—leveling wood blocks, bricks and vitreous tile. It is used for sidewalk repairs and for putting a wearing surface on roofs—for parking automobiles and for heavy traffic lanes.

STEPS

The edges of steps must necessarily be protected. A logical way to do this is to employ iron or heavy sheet metal in the form of a Z bar. Simply bolt it to the front of the step leaving it protrude ⅜" or ½" above the top surface, then fill in between the Z bar and the riser with RUGGEDWEAR RESURFACER. This may be done on marble steps, slate steps, concrete, or wood steps. In the case of wood, 1.8 expanded metal lath should first be nailed on the surface.



For a more artistic job, one might employ a non-slip manufactured nosing especially for that purpose. In this case, your step should be measured and an order sent for exactly the right length.



Repairing Concrete with RUGGEDWEAR

All you need for a RUGGEDWEAR installation is cement, sand, RUGGEDWEAR RESURFACER and a few small pieces of equipment that are available in every plant. A broom, a brush, a shovel, two buckets, a float or a trowel will do the job perfectly.

Simply sweep the place to be repaired or otherwise clean it so that you have a clean, new surface to work on.

If the whole surface is impregnated with grease, use a solution of caustic soda or some other strong solution to remove the grease, then thoroughly rinse and clean the area. If the place to be repaired has been subjected to chemicals, it is recommended that after it has been thoroughly cleaned, you give it a treatment of soda-ash and water to neutralize the acid. Following this, thoroughly rinse the area.

Paint the surface with two applications of PRIMER, which has first been diluted in a proportion of two parts PRIMER and one part water. Where concrete is dusty or chalky, use three applications, including a first application with two parts water and one part PRIMER.

Accurately measure all of your materials in a bucket or in buckets of the same size. Mix all dry materials together first, add your RUGGEDWEAR RESURFACER and then add sufficient water to make a very stiff mortar.

Take a bucketful at a time and either put it in a mortar box or pour it on a clean concrete or wood surface. Measure out your stones first, your sand next and your cement last. Where you use no stones or where you use ROXITE in place of sand and stones, you increase your amount of sand or ROXITE slightly.

Recommended Mixes:

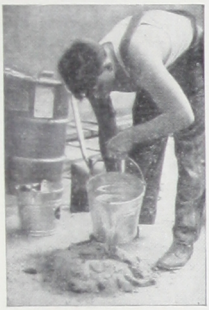
FEATHER EDGE

- 1 part Portland Cement
- 1½ parts RUGGEDWEAR RESURFACER
- 3 parts coarse, sharp, washed sand

ENTIRE FLOORS

- 1 part Portland cement
- 2 parts RUGGEDWEAR RESURFACER
- 2 parts coarse,

Resurfacer Is Very Simple



sharp, washed sand
3 parts stone chips — (not limestone)

Tough ROXITE Mix

1 part Portland cement
1½ parts RUGGEDWEAR RESURFACER
4 parts ROXITE
1 part water

Measure all materials accurately.

When you have the dry materials mixed and you measure out the RUGGEDWEAR, turn some of the dry material over RUGGEDWEAR then add just a portion of the water and start to turn it over.

Keep turning the mass but add slightly more water and be mighty careful that you do not add too much water because you must not make it "sloppy."

You should keep mixing RUGGEDWEAR until all the streaks have left it and it comes up a greenish-black color throughout. It is then ready to place directly over the PRIMER which has already been

applied. It is best to place it with a float and simply go over it once bringing it into proper place.

About two or three hours later you should come back and go over it just once with a steel-trowel—putting the finishing touches to it.

NEXT!—Never neglect to seal down all feather edges by painting a coat of PRIMER over them. Merely put a small strip of PRIMER about an inch on the RUGGEDWEAR installation and an inch over top the old PRIMER, which has extended beyond the repaired area.

It is recommended that if the temperature is below 60° F., and the atmosphere is fairly moist, that you simply let it dry by itself. If the temperature is above 60° F., or if the air is more or less dry,

it is recommended that you put bags or paper over the surface and wet them thoroughly. Keep them wet for 10 to 15 hours in order to retard the setting.

The above instructions apply to patching concrete to a feather edge with RUGGEDWEAR RESURFACER.

You resurface an entire floor exactly the same way, except on a larger scale.

THE LOGIC
of a RUGGEDWEAR REPAIR

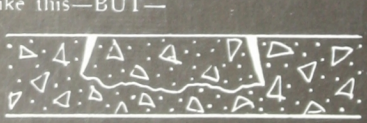
A repair with concrete may be placed like this.—BUT—

It almost immediately cracks like this—

Then it breaks away like this—

Do not repair it like that.

A repair with concrete may be made like this—BUT—



Your trucks hit two joints instead of a hole—and cause this—

Do not repair it like that.

In despair you may go to no limit of expense and try this—BUT—

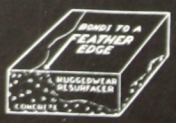
In 2 or 3 hours your best mechanic has to come back and work it down to decrease those two joints like this—

In spite of all your efforts your traffic develops this—

Do not repair it like that.

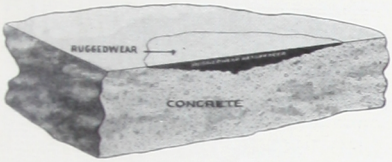
Use
RUGGEDWEAR RESURFACER
like this—

Your job is PERFECT like this



It adheres to a FEATHER EDGE

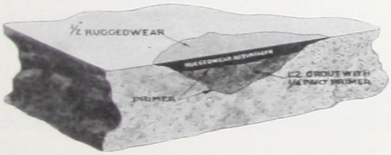
TECHNICAL DETAILS



SHALLOW HOLES — In very shallow holes you need nothing under the RUGGEDWEAR Mortar at all. At ¾" or less, you simply install RUGGEDWEAR Mortar directly over the old concrete after the PRIMER has been applied. This is exactly as indicated in the drawing above.

It is advisable in this type of work to use either ROXITE or a coarse, sharp, washed sand; fresh Portland cement, and RUGGEDWEAR RESURFACER.

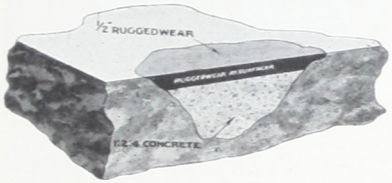
The procedure is to first clean the place to be repaired, coat it with PRIMER, mix your cement, RUGGEDWEAR, and sand or ROXITE according to proper instructions and results desired, then apply this and trowel smooth.



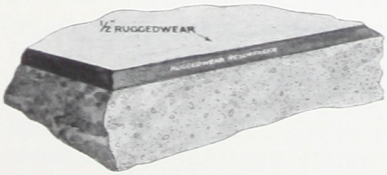
INCH OR MORE DEEP—When the broken place averages 1" to 2" in depth, it is advisable to make the repair in two courses.

You should fill the worn place to within ½" of the surface by using 1 part Portland cement, 3 parts coarse, sharp, washed sand and ½ part RUGGEDWEAR RESURFACER. This, of course, should be applied after the PRIMER has been applied.

After this has been installed and has been left to set for a few hours, you should then come back and place RUGGEDWEAR exactly the same as in the case of shallow holes.

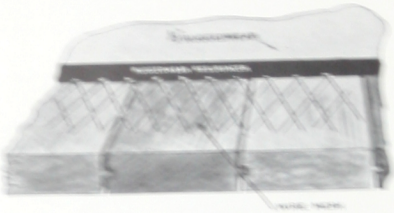


TWO INCHES OR MORE DEEP —Where the broken place is exceedingly deep and goes beyond 2", it is recommended that you install concrete in the bottom merely to save expense. This concrete base will also form a more solid support for the tough RUGGEDWEAR which will form the wearing surface, act as a "seal," and prevent the concrete from breaking out. RUGGEDWEAR installed in this way takes all the wear and its toughness saves the concrete under it from being injured.



RESURFACE ENTIRE CONCRETE FLOORS—It is recommended that you use a heavy duty mix and that you install the material at least ½" to ¾" in thickness. This

will provide an excellent wearing surface and will last for years. Heavy DUTY MIX—ROXITE and RUGGED/WEAR—or sand and crushed granite with RUGGED/WEAR plus necessary cement.



RESURFACE ENTIRE WOOD FLOORS—To install RUGGED/WEAR RESURFACER on wood, it is best to obtain 3.8 expanded metal lath as manufactured by the U. S. Gypsum Co., or Bostwick Steel Lath Co. In place of this material, you may use Gilbert and Bennett wire cloth or John A. Roebling wire cloth, preferably 1½" hex mesh 16 gauge. You nail this material to the old wood floor and then proceed with the RUGGED/WEAR installation exactly the same as though you were going to place it over concrete. These materials are standard and may be purchased from any building supply dealer or mill supply house.

Regardless of what type of floor you have, provided it is going to be used for dry service, RUGGED/WEAR RESURFACER is recommended. However, under wet conditions, RUGGED/WEAR RESURFACER is not recommended and it should not be placed there unless the wet conditions are only temporary or are very, very slight.

DO NOT USE RUGGED/WEAR UNDER CONSTANTLY WET CONDITIONS

Such conditions will separate the bond and will also disintegrate RUGGED/WEAR. This does not include outside weather conditions, but refers to such conditions as those in certain portions of laundries, packing plants, breweries, dairies, etc.

Do not use RUGGED/WEAR under constantly wet conditions. RUGGED/WEAR is intended for either inside or outside use. Ordinary weather conditions are not considered constantly wet conditions but on a laundry floor, a packing house floor, or a tannery floor where there are constant wet conditions RUGGED/WEAR is not to be recommended.

CURING AND FINISHING RUGGED/WEAR RESURFACER

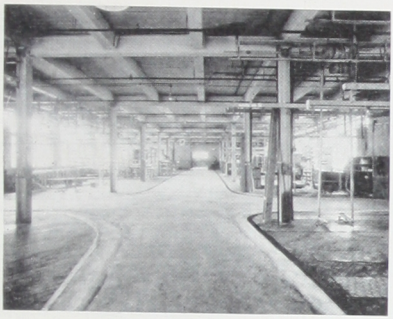
1—Avoid excess troweling.

Let it cure slowly. If conditions are not satisfactory, retard the setting by placing wet bags or wet cloth over the surface. This is a good practice to follow in any event.

3—After RUGGED/WEAR has taken its initial set without any troweling except getting it into the proper place with a float, it is a good idea to go back and give it one short troweling merely to change the grain of the surface.

4—If desired, you may return just after the initial set in about 4 to 6 hours and coat the entire surface with RUGGED/WEAR PRIMER diluted with 1 part water to 4 parts PRIMER. In this case sprinkle the surface with powdered silica the following morning if the PRIMER is still "tacky."

Aisles in Factories

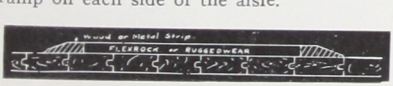


The above unretouched photograph shows aisles resurfaced exactly as drawing below in same column.

Factory aisles constitute one of the biggest problems of industry. Naturally, the aisles bear the traffic. This consistent wear of traffic results in rough, worn and broken places which form a constant hazard in factory aisles.

There are several ways to repair aisles with RUGGEDWEAR RESURFACER. While we would recommend a preference of RUGGEDWEAR mixed with Portland cement and ROXITE, you may simply use Portland cement and ordinary clean, coarse, sharp sand, and clean stone with RUGGEDWEAR.

The aisle over a wood floor may be resurfaced as indicated in this drawing. You may use sand and stone in order to obtain a harder surface in the center, and then use a feather edge mix of RUGGEDWEAR and sand for making your ramp on each side of the aisle.



Another way to handle the same problem is to use either FLEXROCK or RUGGEDWEAR mixes the same as above and place beveled wood or metal strips along the sides of your aisle. This is done by hundreds of companies, particularly where FLEXROCK is used because FLEXROCK cannot be carried to a feather edge, whereas RUGGEDWEAR makes an excellent feather edge in itself when mixed with sand without stones or with ROXITE screened with fly screen.

In the case of concrete floors the matter is even more simple. If you have an even surface and prefer to avoid wearing it, you can put a tough wearing surface of RUGGEDWEAR over the top then use your feather edge mix on each side for a ramp the same as in the case of placing a RUGGEDWEAR aisle over a wood floor in the first instance above.

If you have badly worn concrete, you may desire to merely bring the surface to a perfect level with the surrounding surface. This can also be done. It is a very simple matter to put a tough mix throughout the center portion and then add a mix with just sand and no stones for making your feather edges at both sides.

In all of the foregoing instances, you could use ROXITE in place of your sand and stones or in place of your sand for feather edging—thus, ROXITE throughout the entire area with uniform results.

In using ROXITE over wood it would be recommended that you use the following proportions.

1 part Portland cement
3 parts ROXITE
1½ parts RUGGEDWEAR RESURFACER
¾ part water

Over concrete it is recommended that you use:
1 part Portland cement
4 parts ROXITE
1½ parts RUGGEDWEAR RESURFACER
1 part water

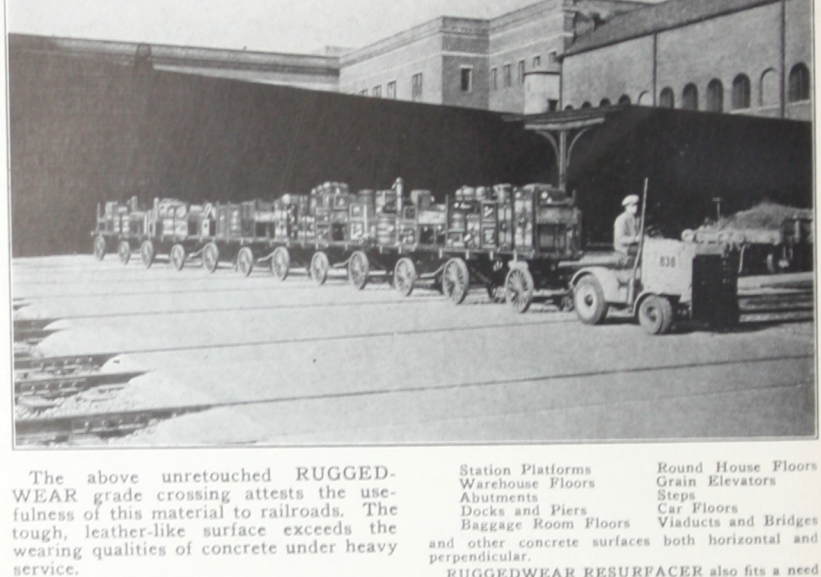
It is necessary to measure all materials accurately to obtain the best results.

CURING AND FINISHING RUGGEDWEAR

To recapitulate the important points of installation:

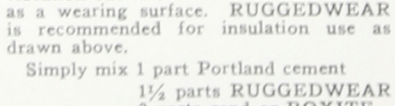
1—Use as STIFF mortar not "sloppy."
2—Float into place and let set.
3—At initial set steel trowel only once, not excessively.
4—Retard setting with wet bags at proper time.
5—Always be sure to seal all feather edges down with primer.

RAILROAD WORK



The above unretouched RUGGEDWEAR grade crossing attests the usefulness of this material to railroads. The tough, leather-like surface exceeds the wearing qualities of concrete under heavy service.

Many engineers are specifying RUGGEDWEAR RESURFACER for new work as well as repairs. The advantages of low cost and long service are the two major advantages.



MODERN CONCRETE GRADE CROSSING

On the job photographed above RUGGEDWEAR is used for taking the track vibration out of the concrete slabs as well as a wearing surface. RUGGEDWEAR is recommended for insulation use as drawn above.

Simply mix 1 part Portland cement
1½ parts RUGGEDWEAR
3 parts sand or ROXITE

Plaster coat this mortar ½" thick against the guard rails and along the outside of the track—then pour your concrete up to it. This eliminates forms—dirt or stone fills—or other types of insulation to keep the track vibration away from the slabs.

RUGGEDWEAR RESURFACER is used by most of the large railroads. It is used for repairing concrete:

Station Platforms	Round House Floors
Warehouse Floors	Grain Elevators
Abutments	Steps
Docks and Piers	Car Floors
Baggage Room Floors	Viaducts and Bridges

and other concrete surfaces both horizontal and perpendicular.

RUGGEDWEAR RESURFACER also fits a need over wood platforms and wood floors for entirely resurfacing. It is also used over bricks, asphalt and solid cinder fills.

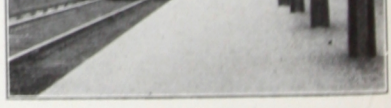
Over Wood:—Nail 1.8 expanded metal lath for a bond and proceed.

Over Bricks:—Remove mortar or dirt 1" deep—fill joints with RUGGEDWEAR properly mixed with cement and sand then prime surface again and proceed as over concrete.

Over Asphalt:—Same as concrete.

Over Solid Cinder Fill:—Same as concrete except must use larger quantity of PRIMER and resurface—cannot patch.

RUGGEDWEAR provides a TOUGH wearing surface.



Repair and resurface Station Platforms with RUGGEDWEAR RESURFACER

RUGGEDWEAR ESTIMATING TABLES

Coverage and Quantities of Materials

Coverage and Quantities of Materials proportionate to standard RUGGEDWEAR and PRIMER sizes.

Container	Mix	Bags Cement	Ruggedwear & Primer in Lbs.	Sand In Lbs.	Stone In Lbs.	Thickness	Approx. Coverage
1 bbl.	1:1½:3	6	630	1800		⅜″	650 sq. ft.
	1:2:2:3	4⅓	630	867	1300	½″	690 sq. ft.
	1:2:2:4	4⅓	630	867	1750	½″	750 sq. ft.
Small bbl.	1:1½:3	5	525	1500		⅜″	550 sq. ft.
	1:2:2:3	3⅔	525	734	1067	½″	580 sq. ft.
	1:2:2:4	3⅔	525	734	1450	½″	640 sq. ft.
¾ bbl.	1:1½:3	4½	440	1350		⅜″	500 sq. ft.
	1:2:2:3	3⅓	440	667	1000	½″	525 sq. ft.
	1:2:2:4	3⅓	440	667	1350	½″	585 sq. ft.
½ bbl.	1:1½:3	2⅔	295	800		⅜″	300 sq. ft.
	1:2:2:3	2⅔	295	400	600	½″	360 sq. ft.
	1:2:2:4	2⅔	295	400	800	½″	420 sq. ft.

Material Required per 1000 sq. ft. of Floor to be Resurfaced

Mix	Sacks Cement	RUGGEDWEAR and PRIMER	Lbs. Sand	Lbs. Stone
1:1½:3	10	1¾ bbls.	3000	
1:2:2:3	7	Small bbl. and ¾ bbl.	1400	2100
1:2:2:4	6⅓	1½ bbls.	1267	2550

Measures and Equivalents

7½ Gals. = 1 cu. ft.

100 lbs. Sand = 1 cu. ft.

8 lbs. RUGGEDWEAR = 1 gal. approximately

THUS:

1 bbl. RUGGEDWEAR = 8⅔ cu. ft. plus PRIMER for bonding

Sm. bbl. RUGGEDWEAR = 7⅓ cu. ft. plus PRIMER for bonding

¾ bbl. RUGGEDWEAR = 6⅔ cu. ft. plus PRIMER for bonding

½ bbl. RUGGEDWEAR = 4 cu. ft. plus PRIMER for bonding

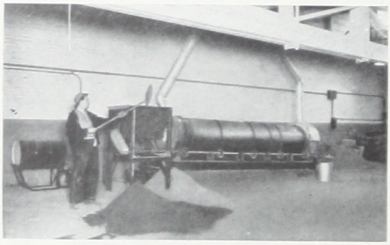
RUGGEDWEAR and PRIMER comes in steel drums

ROXITE

Harder than Quartz . . . Cuts Glass . . . Tougher than Donerite . . .

ROXITE is a quarried stone found in three places in the United States. This stone is very hard and primarily consists of quartz. The type of quartz, however, is a very hard, glass-like material yet it is extremely tough. In spite of the fact that it will cut glass the same as the usual quartz, it will not chip or break like the ordinary quartz.

After this material is quarried, it is crushed and even though it has no vegetable matter or animal matter content, it is washed clean of all foreign matter and dust. It is then graded according to size so that the particles all fit together and form a solid mass.



The above is a photograph of one of the machines used in the manufacture of ROXITE in the Flexrock Plant, Philadelphia.

ROXITE is then dried in a kiln until the moisture content is zero.

As strange as it may seem, you can spread ROXITE out at about ½" or ¾" thick and walk on it without sinking in. If you make concrete with ROXITE and you hold your water ratio to proper proportions, you can walk on the top surface to trowel the material immediately after you have placed it without sinking into it. This is a peculiarity of ROXITE and it is the major reason that ROXITE forms a harder and more compact surface for heavy duty floors than any other material known.

ROXITE is useful with RUGGEDWEAR RESURFACER and with CONCRETDENSE. You use ROXITE instead of using a local sand and stone.

The recommended use of ROXITE with RUGGEDWEAR would be as follows:

1 part Portland cement
1½ parts RUGGEDWEAR RESURFACER
4 parts ROXITE
1 part water

If you measure the above accurately, you will never be able to obtain a better floor surface for any heavy duty factory work. It may be used outside or inside with perfect results.

ROXITE is also used instead of sand and stones with CONCRETDENSE. Use 1 part Portland cement with 4 parts ROXITE and add just sufficient water to obtain a STIFF mortar.

Use the above at least 1¼" thick according to the detailed instructions with CONCRETDENSE.

Especially Suitable for Sugar Plants

ROXITE is especially adaptable for any concrete work where perfect results are desired. It is the best material for obtaining a tight grained repellent concrete for floors of sugar plants, packing houses and for other such purposes. In Island countries it is best to import ROXITE rather than use the local coral sand. The results are unquestionable.

ROXITE			PORTLAND CEMENT		RUGGEDWEAR RESURFACER AND PRIMER					WATER		COVERAGE	
Bags	Lbs.	Tons	Bags	Bbls.	Size	Gals.	Approx. Lbs.	Approx. PRIMER Wgt.	PRIMER Volume	Quarts	Gals.	3/8" thick	3/4" thick
5	500	¼	1¼	....	¼ bbl.	15	115	25 lbs.	3 gal.	37½	9½	180′	90′
10	1,000	½	2½	....	½ bbl.	30	236	38 lbs.	5 gal.	75	19	360′	180′
18	1,800	9/10	4½	1⅛	¾ bbl.	50	395	38 lbs.	5 gal.	135	34	600′	300′
20	2,000	1	5	1¼	small	55	435	76 lbs.	10 gal.	152	38	660′	330′
23	2,300	....	5¾	1 7/16	reg.	65	515	115 lbs.	15 gal.	176	44	780′	390′
115	11,500	5¾	28¾	7¼	5 bbls.	325	2575	575 lbs.	75 gal.	876	219	3,900′	1,950′
230	23,000	11½	57½	14¼	10 bbls.	650	5150	1150 lbs.	150 gal.	1752	438	7,800′	3,900′
345	34,500	17¼	86¼	21¾	15 bbls.	975	7725	1725 lbs.	225 gal.	2628	657	11,700′	5,850′
460	46,000	23	115	29	20 bbls.	1300	10300	2300 lbs.	300 gal.	3504	876	15,600′	7,800′
575	57,500	28¾	143¾	36¼	25 bbls.	1625	12875	2875 lbs.	375 gal.	4380	1095	19,500′	9,750′
690	69,000	34½	172½	43½	30 bbls.	1950	15450	3450 lbs.	450 gal.	5256	1314	23,400′	11,700′

Quick Repairs Under Strain of PEAK PRODUCTION

"More hurry — less speed — "The significance of this axiom lies in neglect. Usually our hurry makes us overlook obstacles that we would ordinarily remove, and transforms them from a "step in our procedure" to a "stumbling block."

If we were not so busy, we would fix that fence—mend the insulation on that wire—repair that broken floor—or make innumerable other NECESSARY REPAIRS.

Perhaps we think our increased production schedule makes them "less necessary." It usually makes us only "less human" and the urgent repairs "more necessary."

FLOOR and ROOF REPAIRS—or to defer them—causes accidents, merchandise destruction and spoilage, ruined equipment and machinery, dissatisfied employees, increased operating costs, and a resultant poor showing to the boss and ultimately a loss to stockholders.

A better axiom to follow is, "A stitch in time saves nine." It increases production EFFICIENTLY, gives you greater satisfaction—and makes the boss wear a smile.

Quick repairs of industrial floors can be made with RUGGEDWEAR RESURFACER. Under strain of heavy production, repair half the aisle at a time, let it stand overnight, then put it in service and repair the other half. There is no delay in traffic; no inefficiency.

Make repairs on Saturday and turn traffic over the new floor Monday.

Repair school steps over the weekend, and put them in service Monday morning. This is easily done with RUGGEDWEAR RESURFACER.

There is no product, and hundreds have been tested, that will do a quicker job than RUGGEDWEAR RESURFACER—with permanence.

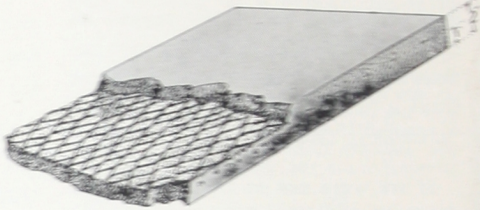
Wet Floors

Where you have constantly wet conditions or severe cold conditions, CONCRETDENSE will do the quickest job—with permanence.

There is a quick method and material for nearly any type of job—on floors—roofs—walls—or waterproofproofing.

PROFITABLE SUGGESTIONS

Simple, logical suggestions for greater economy and better jobs in the maintenance of buildings and practical wearing-surfaces.



Steel Grid

When steel grids are placed, concrete is usually poured into them. As traffic rolls over the finished job the steel vibrates and eventually begins to chip the concrete. Inasmuch as the grids separate the concrete into small blocks (usually about one cubic inch size), the concrete easily breaks and crumbles.

Instead of using hard, brittle concrete in steel grid—RUGGEDWEAR RESURFACER is recommended. This is because it is flexible like the grid itself. It "goes" and "comes" with the grid and therefore lasts much longer than concrete.

Waterproof Floors

Always remember that you can put roofing on any floor,—then put another floor over the roofing and you have a waterproof floor.

The best waterproofing consists of a layer of roofing paper—coat of ROOF CEMENT — SATURATED COTTON FABRIC — coat of ROOF CEMENT — layer of roofing paper—and a final coat of ROOF CEMENT.

Over this you may put a wood floor, concrete floor—CONCRETDENSE floor —or a RUGGEDWEAR floor.

Reinforcing of Concrete Slabs

It is recommended that sheets of 1.8 expanded metal lath or 16 gauge 1½" chicken wire be used for reinforcing.

The procedure is to place the CONCRETDENSE about one inch thick—throw in the metal reinforcing—then immediately place the rest of the material. This puts the reinforcing through the center of the slab. All reinforcing should be lapped an inch or two.

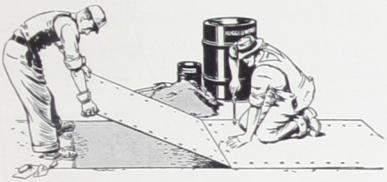
REINFORCING prevents cracks,—localines abrasion from severe shocks or abuse, and prevents shattering. It permits the slab to accept more vibration without injury and also adds considerable strength.

Barrels on Chimes

The best material under conditions where barrels are rolled on chimes is CONCRETDENSE. It is very hard,—wears like iron,—and does not cut from the barrel chimes.

Never use any kind of mastic or semi-mastic where barrels are to be handled.

IN PLANT MAINTENANCE

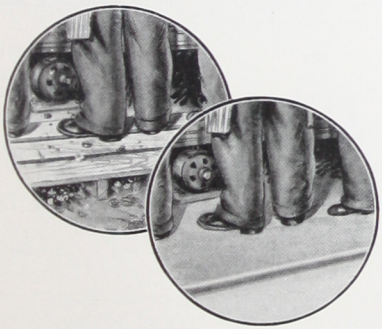


Setting Steel Plates

Under extremely heavy traffic many companies have gone to steel floor plates. These plates are bolted to the concrete floor with expansion bolts.

Two things happen: 1—The plates become loose and cause accidents. 2—The heavy traffic rolls the top surface of the plate past the bottom surface and makes it curl. This is noticeable in a short time when the edges and corners turn up.

The positive cure for this is to set them in RUGGEDWEAR RESURFACER,—then bolt them down. They will stay there—in perfect condition indefinitely.

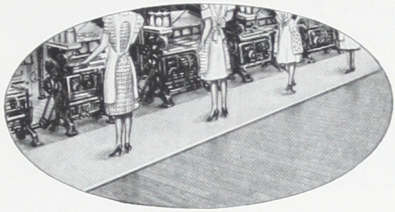


A Dollar Saved is a Dollar Earned

In back of benches and counters one often finds "duck boards." Thousands of small articles are dropped and lost under these unnecessarily.

RUGGEDWEAR RESURFACER is just as easy on the feet and it totally eliminates the loss or the destruction of small articles under and around the bench or counter. RUGGEDWEAR is ever so much cleaner, and easier on the feet than duck boards.

RUGGEDWEAR RESURFACER totally eliminates roaches, vermin, and dirt:—it cannot harbor mice. It is always sanitary and comfortable.

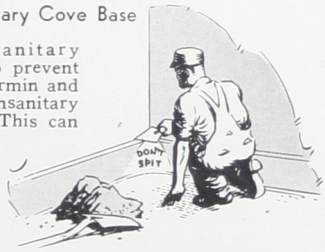


Increased efficiency and consequently increased production results from the ingenuity of many smart plant superintendents in making workers comfortable. This is accomplished by "easing" the strain on the feet of those who must stand all day.

RUGGEDWEAR RESURFACER is warm to the feet; easy to walk on and very comfortable. It may be conveniently installed in front of benches, hosiery machines, counters, packing benches, wrapping desks, and in many other places for people to stand on.

Mold a Sanitary Cove Base

Mold a sanitary cove base to prevent dirt, bugs, vermin and generally unsanitary conditions. This can easily be done in washrooms, corridors, and other factory rooms generally with RUGGEDWEAR RESURFACER.

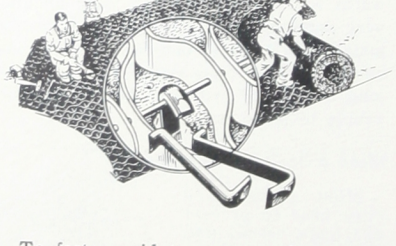


If you are working on a concrete floor with a concrete wall, it is a very simple problem to trowel RUGGEDWEAR RESURFACER according to ordinary instructions up on the wall three or four inches with ordinary cement finishing trowels. If it is a wood floor with a brick or wood wall it is advisable to first nail a strip of metal lath along the edge and then trowel the coved base on accordingly.

PROFITABLE SUGGESTIONS

Under destructible traffic, it is often advisable to use steel grid. As an example, types of steel grid on the market, Hexsteel and Acme Floor Steel are shown below. Both of these are manufactured by Klemp Manufacturing Co., of Chicago.

There are other kinds of floor grid and other manufacturers. With all of these grids, RUGGEDWEAR RESURFACER provides an excellent, tough, rugged, wearing-material as a fill between the metal.



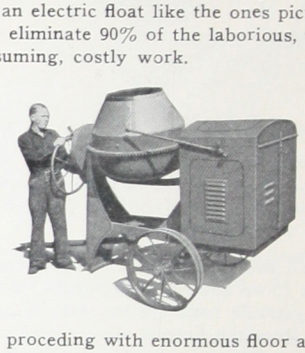
To fasten grid to concrete floors it is recommended that you use the regulation cleats or anchors. You first drill the floor, then pour molten lead after these anchors have been set in place. Cut the hole in the concrete larger at the bottom than at the top so that it forms a key to prevent the lead from pulling up even if it might become loose.

After the grid is installed, it is a simple process to mix RUGGEDWEAR and install it slightly above the surface of the grid, making sure that it is well tamped in between the iron.

No better or more rugged wearing-surface may be found regardless of the loads that it must carry.

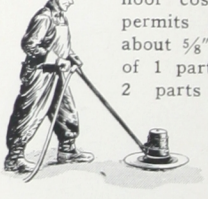
Installation of Enormous Areas of Floor

On large jobs machine operations tremendously cut costs. A mixing machine and an electric float like the ones pictured here eliminate 90% of the laborious, time-consuming, costly work.



In proceding with enormous floor areas, you simply set the screed strips 6 ft. apart, mix your RUGGEDWEAR, cement and sand in a power mixer, place it, screed it level, and rough trowel it.

When RUGGEDWEAR takes its initial set, you simply put the automatic float on the job and finish, hundreds and hundreds of square feet.



This limits 90% of the floor cost to material and permits a heavy floor of about 5/8" thick using a mix of 1 part Portland cement, 2 parts RUGGEDWEAR RESURFACER, 2 parts coarse, sharp, washed sand, and 4 parts 1/2" crushed traprock, granite, or some other hard crushed stone. Never use limestone or other soft stone.

The automobile industry has proved the efficiency and the economy of the type floor installed by this method.

Thousands and thousands of square feet of RUGGEDWEAR RESURFACER can be found in Ford, Chevrolet, Buick, Nash, and most of the other automobile manufacturing plants. RUGGEDWEAR has proved to be the ideal, TOUGH floor for American industry.

IN PLANT MAINTENANCE

Tops of Work Benches

On top of work benches one often finds FLEXROCK in its natural wood pulp color. There is nothing better for a bench top where fine work and small parts are involved. Clock parts, meters, small gauges and other light precision work is most efficiently done on a FLEXROCK bench top.

Install FLEXROCK on a bench top the same as you install it on a floor.

ENGINE ROOMS

Fire Towers, Washrooms, Steps, Lobbies and Corridors

Sanitation is important in all of the above places. A clean, neat appearance indicates good housekeeping.

In most of the above places, plant engineers paint the surface in order to obtain the desired result. Instead of painting the surface, it is a very simple problem to use a gloss dye for these conditions.

COLORFLEX is such a gloss dye. It may be very easily and quickly installed by the janitor or porter with an ordinary roofing brush. It seeks its own level,—the first coat penetrates and the second coat provides a wonderful gloss finish.

COLORFLEX details will be found on page 25 in this HANDBOOK.

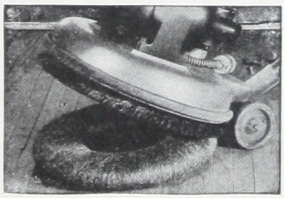
Nailing to Concrete

Many materials are ordinarily not recommended for concrete floors because it is difficult to obtain a bond. To attach any material to concrete presents a problem.

In the case of waterproofing or applying plastic materials over a concrete surface, this problem has now been partially solved with the use of concrete nails. While FLEXROCK COMPANY will not guarantee that this is a perfect solution in applying FLEXROCK or other plastic materials to concrete surfaces, it is a logical method and under certain conditions will do a good job.

Excess vibration is the only thing that will make these nails become loose and, therefore, if there is no excess vibration, expanded metal lath may be nailed to the floor and FLEXROCK attached by this method. Again, there is definitely no guarantee on the part of FLEXROCK COMPANY and is to be no guarantee on the part of any FLEXROCK representative that this is the perfect solution in making a positive mechanical bond for plastics to concrete surfaces.

Make tests—if your concrete will hold these concrete nails you may use them.

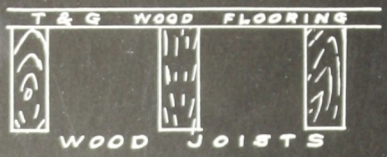


Polish Floors Made With FLEXROCK

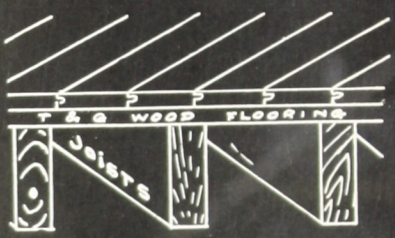
Polishing FLEXROCK floors is a very simple problem. After a sanding machine has been employed, a final polish can easily be obtained by simply purchasing steel wool in doughnut shape from a company such as Williams Company, of 75 W. First St., London, Ohio, and placing it under your disc scrubbing machine.

This does an excellent job not only in finishing FLEXROCK, but in re-finishing wood floors and most any composition flooring material, especially those installed in colors such as the magnesium oxychloride cement family.

TYPES OF FLOOR CONSTRUCTION

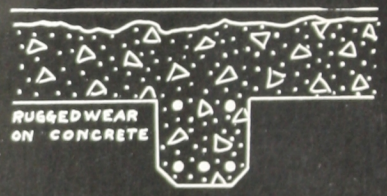


Plain Mill Type wood floor construction. Resurface by nailing 1.8 metal lath and then trowel in *RUGGEDWEAR* 1-1¼-3 mix or trowel in *FLEXROCK*.



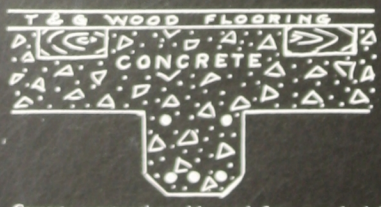
Double wood floor construction. Nail metal lath and resurface with *RUGGEDWEAR* or *FLEXROCK*.

Laminated joists or heavy mill type construction. May be resurfaced with either *FLEXROCK* or *RUGGEDWEAR RESURFACER* the same as the plain mill type above.

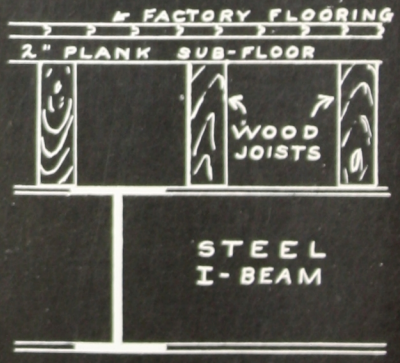


Concrete construction resurfaced with *RUGGEDWEAR RESURFACER*. This may be done at time of construction or after any concrete floor has worn.

Concrete construction with wood floor over sleepers and cinder fill. 1—Resurface wood floor with *FLEXROCK* or *RUGGEDWEAR*. 2—Remove wood floor, sleepers, and cinder, then resurface rough base with *RUGGEDWEAR* or *CONCRETDENSE*.



Concrete construction with wood floor over buried sleepers. 1—To resurface use *FLEXROCK* or *RUGGEDWEAR* over the old wood floor. 2—Or remove wood floor leaving sleepers for nailing expanded metal lath. Resurface with *FLEXROCK* or *RUGGEDWEAR*. 3—Remove floor and sleepers. Fill sleeper grooves with concrete and resurface with either *RUGGEDWEAR* or *CONCRETDENSE*.



Steel & Wood

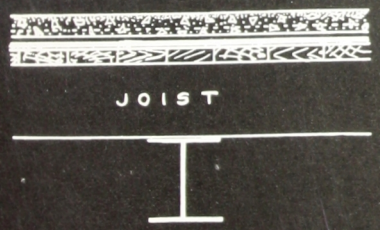
Steel and wood construction for heavy service. It may be resurfaced with *FLEXROCK RUGGEDWEAR*, or with *CONCRETDENSE*. It may also be resurfaced in combinations using waterproofing, tile and/or any above material.

Correction of Common Difficulties

Resurfacing over double wood floors, aisles alone may be finished off with excellent results by simply removing two of the top floor boards.

A hand power circular saw may be used for cutting cross-wise of the floor.

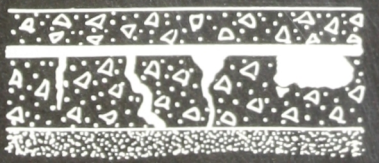
A wonderful construction for packing houses, acid-proof floors, etc., is of tile or vitreous brick set with *LONGLIFE*. 1—Have a solid, level *CONCRETDENSE* or concrete base. 2—Cover with pure mineral asphalt, *LONGLIFE*. 3—Set tiles or bricks with *LONGLIFE* with tight joints open ⅜" from top. 4—Sweep abundance of powdered silica into joints. Sweep excess off.



Exceedingly heavy floor construction may be waterproofed and made acid-resistant for oil plants where drums are rolled on chimes. 1—Clean floor. 2—Treat with *LONGLIFE* and install Saturated Cotton Fabric with additional heavy coats of *LONGLIFE*. 3—Install ¼-inch sand and *LONGLIFE* base. 4—Install *CONCRETDENSE* with heavy expanded metal for reinforcement. Slab 2½" to 3" thick. 5—Treat the surface with *FLINTCRUST*. This is ideal for canneries, dye houses, tanneries, etc.

An old concrete slab may be salvaged by waterproofing it with *LONGLIFE* and mixtures of *LONGLIFE* and sand. If it is to withstand heavy traffic it should be resurfaced with *RUGGEDWEAR*, a cement mortar, or another concrete slab.

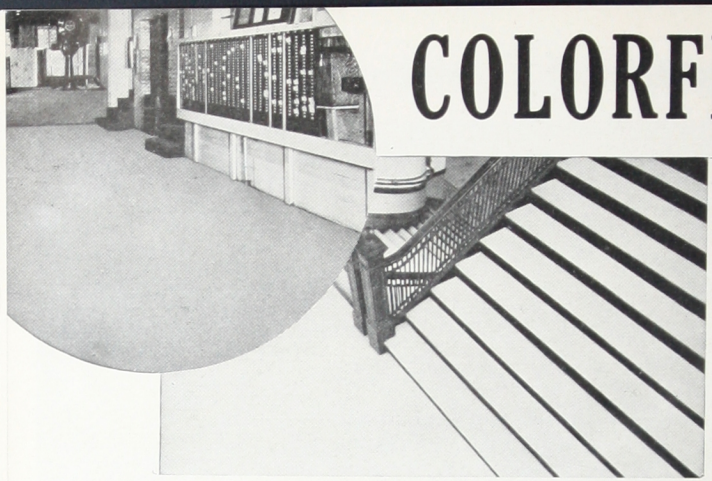
This slab could be resurfaced after filling all cracks and low places with *LONGLIFE* and Sand. No dampness will come through this from below unless under pressure.



If it is desired to thoroughly waterproof an old slab and put a new 3" slab over it, this can be done by using *LONGLIFE* and *FLEXROCK Saturated Cotton Fabric*.

Such a slab may be resurfaced with a 1-3 or 1-2 cement-sand mortar or with a 1-2-3 or 1-2-4 concrete. In the former case, 1" is recommended and in the latter 3" with ½" or ¾" crushed stone.

COLORFLEX—



Factory floors, school steps, corridors, shipping platforms, washroom floors, vestibules, warehouse marking, warehouse floors and even basement recreation floors, present problems easily solved by applying a beautiful coat of COLORFLEX.

COLORFLEX is not a paint. It does not require the skill and care of application to prevent streaking. This material may be applied with a roofing brush or whitewash brush,—yet it has even a better appearance,—and gives better service than concrete paint.

COLORFLEX is actually a dye! It looks like enamel but serves many more purposes. It is a CONCRETE PRESERVATIVE against the wear of traffic. It is also a penetrating sealer and an enamel in one.

Recreation rooms, gymnasiums, pool rooms, and other game rooms should have COLORFLEX floors.

SIMPLICITY—In the evening, after everyone has gone, you simply have your janitor or porter coat the floor with COLORFLEX and in the morning you use the floor. It dries unusually hard in a very few hours.

The next night you give it the second coat.

The hard enamel-like surface of COLORFLEX will withstand tremendous wear in itself, but its penetration also supports the surface particles of cement and sand in your concrete and prevents it from grinding away under the constant and severe traffic conditions.

COLORFLEX will withstand tests of concentrated sulphuric acid, dilute sulphuric acid with water, carbolic acid, total alkalinity (sodium hydroxide) and you may pour alcohol on it and ignite the alcohol. None of these tests will even affect the gloss on COLORFLEX with the possible exception of green color wherein sodium hydroxide destroys the blue and leaves what appears to be a yellow deposit. If there is no alkali present, green is a wonderful color.

Four warm, harmonious colors make COLORFLEX ideal for corridors, fire towers, factory floors, washrooms, gymnasium, recreation rooms, showers, locker rooms and many other industrial surfaces as well as home basements, play rooms, and bars.

COLORS:

Linoleum Brown
Battleship Gray
Emerald Green
Tile Red

According to volume demand, people seem to select colors in the following order:—

Battleship gray runs about two to one against the combined sales of all other colors. Then, successively come tile red, linoleum brown and emerald green.

COLORFLEX is also used on wood floors as well as concrete floors. It serves to preserve wood floors as well as to create a warm, harmonious and immaculate appearance.

ACTUALLY A GLOSS PENETRATING DYE

Condition and type of original concrete floor quickly and easily determines procedure for using COLORFLEX. If the surface of concrete is acid, you need not do anything but simply brush COLORFLEX over the entire floor, leaving the first coat dry, and then apply the second coat.

If the floor is alkaline, although you have a little bit more work, the problem is just as simple. Simply go to the nearest grocery store and purchase a bottle of vinegar. Mix two bottles of water with one bottle of vinegar and scrub it into the floor. Following this, immediately rinse it from the floor, taking care to thoroughly rinse it. As soon as the floor has dried, you then simply apply COLORFLEX with an ordinary roof brush, a white wash brush, or a mop. A white wash brush or a roof brush is the easiest to use because they are not so cumbersome as a mop.

The above experiment consists of pouring sulphuric acid on COLORFLEX which has been placed in a single coat only on a board. Sulphuric acid does not even affect the gloss.

Simple Instructions:—A wood floor needs no preparation except that it must be clean. A concrete floor must also be clean and handled according to the above description, depending upon whether it is acid or alkaline. You can never be wrong if you first treat the floor, presuming that it is alkaline.

Upon arrival of COLORFLEX on the job, simply remove the lid of the barrel and stir COLORFLEX with a broom handle or a stick. This brings the heavier material to the top and "mixes it in." A board is perhaps better than a broom handle for mixing. Then take a roofing brush or white wash brush as explained above and apply COLORFLEX. Brush it sufficiently to keep it from "puddling."

The above dropper contains sodium hydroxide. (extreme alkali). This test proved that COLORFLEX is not affected even the slightest.

If the concrete is very close-grained and COLORFLEX does not seem to penetrate, a good suggestion is to mix benzol or Xylol with it for applying the first coat.

If the job is done in the evening, the floor may be put into service next morning. The first coat will not dry with a gloss because it goes into the surface of concrete or wood. The second coat, applied the following evening, will become glossy by the following morning. The traffic during the intervening day makes no difference. Merely have the surface clean each time COLORFLEX is applied.

COLORFLEX will present a sparkling, enamel-like finish! It will tremendously improve the appearance of your whole plant, but, more important, COLORFLEX will take the wear and tear instead of wearing out the floor itself. COLORFLEX will outlast a thousand coats of wax and it will lend the additional advantage of color.

COVERAGE:—250 to 400 sq. ft. per gal. including two coats. This depends upon how porous or how splintery the concrete or wood may be.

SHIPPING WEIGHT:—

55 gal. bbls.	496 lbs.
30 gal. ½ bbls.	280 lbs.
15 gal. ¼ bbls.	137 lbs.
10 gal kegs.	96 lbs.
5 gal. pails	45 lbs.

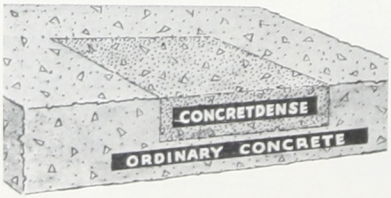
PERMANENT FLOORS— DENSE, WATERPROOF CONCRETE

When CONCRETDENSE is once installed it is permanent.

Concretdense is used on these floors with excellent results. Concretdense perfectly solves this wet floor problem.

In making a repair with CONCRETDENSE it is necessary to chip the surface at least 1″ deep and it is recommended that it be chipped 1½″ to 2″ deep in making a CONCRETDENSE resurfacing job.

This drawing indicates the way con-



crete should be cut for making a CONCRETDENSE repair. Ordinarily, however, CONCRETDENSE is laid over an entire surface at about 2″ thick. When this is done and 1.8 expanded metal lath is used through the center as reinforcing, you have the best type of floor installation possible. It will meet almost any condition because it is very similar to concrete with the exception that the grain is much finer and much tighter.

NEW FLOORS WITH CONCRETDENSE:

Merely clean the surface thoroughly and then roughen to some extent.

For bond coat use CONCRETDENSE WASH and apply your material before coat is dry.

CONCRETDENSE should be used 1½″ to 3″ thick in every instance.

CONCRETDENSE produces a smooth, hard, rugged wearing surface. It is impervious to penetration of liquids, and results in many extra years of service.

Foundations and Construction

CONCRETDENSE may also be used in general construction for waterproofing. It also assists in cold weather as well as adding to fireproof qualities of concrete.

In most instances for foundation or general construction, it is advisable to use a proportion of 1 part CONCRETDENSE to 10 to 15 parts of water.

SUGAR REFINERIES — CONCRETDENSE is used in this industry in the United States, Cuba, Hawaii and Puerto Rico.

with CONCRETDENSE
(EXTRA STRUCTURAL STRENGTH)

Where permanent structures are erected, forethought must be given to many elements. These may include cold weather, moisture, fire, waterproof, abrasion, acids, and others.

Some permanent concrete work *must* be installed under adverse conditions. In many instances it is necessary to use an integral hardener.

To obtain the best results, CONCRETDENSE is recommended for the following purposes:

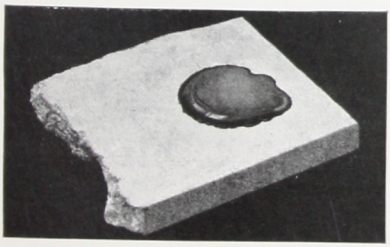
Waterproof concrete.
Cold weather work.
Some acid resistance.
To resist abrasion (floors).
High early strength.
Fire resistance.
Harden concrete.

CONCRETDENSE is used for:

Cable Ducts	Grain Elevators
Coal Bunkers	Ramps and Drives
Dams	Retaining Walls
Sewers	Bridges
Irrigation Ditches	Reservoir Lining
Concrete Tanks	Bee Hive Coke
Foundations	Oven Floors

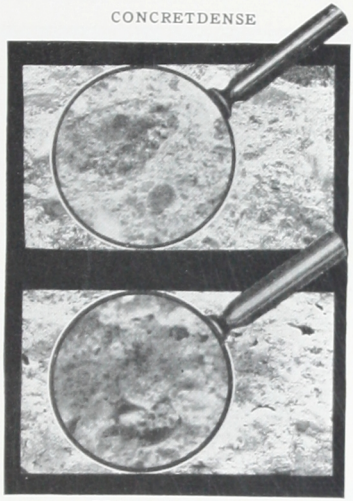
COMPRESSION TESTS

Age	Pounds per Square Inch CONCRETDENSE	CONCRETE
18 hours	1150	No Test
24 "	1430	1077
48 "	2260	1766
72 "	2770	No Test
7 days	4896	3456



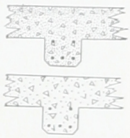
Under oil conditions Concretdense has three times the life of concrete.

CONCRETDENSE



PLAIN CONCRETE

TEST— TOP—With Concretdense.
BOTTOM—Without Concretdense.



This is the result of breaking two test blocks. Both were photographed and magnified. Notice the actual change of grain and the absence of "voids" in the Concretdense block. Both blocks were made exactly the same except for the introduction of Concretdense in the top one.

Concretdense Wash

1 quart of CONCRETDENSE, 1 gallon of water, 15 lbs. Portland cement.

The only change from installing ordinary concrete is to be sure you use CONCRETDENSE wash properly. Scrub it into the old surface and be sure it is still wet when you install your CONCRETDENSE mortar.

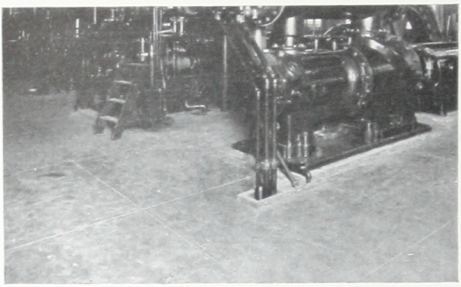
Be sure that you use the smallest quantity of liquid possible with CONCRETDENSE just so long as you obtain a workable mortar. The mortar should be "stiff" and not "sloppy."

Quantities of Materials for One Cubic Yard Rammed Concretdense

MIX	BAG OF CEMENT	CU. YDS. SAND	CU. YDS. STONE	GALLONS SOLUTION	GALLONS CONCRETDENSE
1-2-3	7	0.52	0.77	35	4¼
1-2-4	6	0.45	0.89	34	4

NOTICE:—To figure quantities for a specific job at 2" thick—divide the area by 40—divide the result by 4, and then multiply by the above figures according to the mix desired.

GREASE and OIL are not so hard on CONCRETDENSE FLOORS



Concretdense is ideal for floors to be subjected to extreme grease conditions.

Concretdense Instructions (SPECIFICATIONS)

CONCRETDENSE is a combination of chemicals—liquid form—properly proportioned and mixed under laboratory control. The use of CONCRETDENSE produces waterproof concrete; it creates a better bond to the old concrete; it provides a more dense, more wear-resistant concrete, a concrete which may be used 18 hours after installation; a hard, fine texture surface, highly acid resistant.

SOLUTION: CONCRETDENSE is incorporated in the concrete mix through the medium of water—in other words, it is simply added to water in the ratio of 1 part CONCRETDENSE to 8 parts water; or a volume proportion would be 1 gallon CONCRETDENSE to every 8 gallons of water. This is the standard SOLUTION and wherever SOLUTION is used in these instructions it is understood that this SOLUTION is mixed in the above proportion.

Preparation of this SOLUTION is the first requisite. Make same in a receptacle or container of a size which will be in proportion to the amount of work. The SOLUTION should be thoroughly mixed and the quantity will depend upon the amount of concrete to be used. It is a very simple operation thus it is best to confine the quantity close to the actual requirements as the work progresses.

AGGREGATES: All aggregates must be carefully selected. Only the best grade PORTLAND CEMENT should be used—the sand should be clean—washed—coarse—sharp—and free from impurities such as loam, clay or organic matter—the stone should also be clean, hard and sharp.

The water used should be free from impurities such as oil, alkali, acid, etc. Drinking water is most suitable.

MIXTURES: The mix depends on the class of work—generally speaking a 1-2-3 mix or a 1-2-4 mix covers a wide span of work such as floors, walks, pavements, roofs, foundations and various types of reinforced concrete. The mix as referred to above is standard, that is cement—sand—stone.

CONCRETDENSE MIX: In all cases where this term is referred to, the regular concrete mix is applicable as specified for the job. For instance, should a 1-2-3 mix be specified — the SOLUTION is used instead of plain water to make the mortar. If any other mix is specified the SOLUTION given is used instead of plain water to make the mortar, hence the term CONCRETDENSE MIX as used throughout these instructions simply means the regular concrete mix made with CONCRETDENSE SOLUTION instead of plain water.

WATER CONTENT: Much stress must be laid on the water cement ratio. An excess weakens the concrete; adversely an insufficient amount interferes with a thorough mix. The slump test provides a good method of ascertaining

CONCRETDENSE — Easy to Install

DETAILED INSTRUCTIONS

whether the mix is properly proportioned. CONCRETDENSE aids tremendously in this respect as it reduces the plain water content, at the same time it sets up the necessary chemical reaction.

FOR NEW FLOORS OR OTHER NEW WORK: Use the above SOLUTION in connection with any concrete mix which is specified—thus the entire slab or work will be CONCRETDENSE.

RESURFACING CONCRETE FLOORS WITH CONCRETDENSE: The preparation of the whole concrete floor should be as follows: First sweep it clean. Should any foreign materials exist such as oil, grease or chemicals, the use of trisodium phosphate, a strong caustic soda, theta-silica or some other good solvent is recommended to secure a good clean floor. In all cases the solvent used must be neutralized by washing with clean water and it will be necessary to allow the floor to dry thoroughly before installing the CONCRETDENSE.

When resurfacing with CONCRETDENSE the resurfacing slab must in all cases be at least 1½" thick, a slab of at least 2" or more gives the best results. After the floor is perfectly clean, roughen the surface to some extent, accomplished by the use of some sharp instrument or hammer to make indentations about every 5 or 6 inches over the entire surface. This will roughen the surface sufficiently to take care of any movement of the slab after it is installed. The floor is then swept clean again. The next step consists of making a CONCRETDENSE wash, which consists proportionately of 1 qt. CONCRETDENSE, 1 gal. water and 15 pounds of PORTLAND CEMENT. Prime the old concrete with this solution making sure that the surface is thoroughly saturated. Next apply the CONCRETDENSE mix while the floor is still wet. Under no circumstances should the CONCRETDENSE wash be allowed to become dry before the CONCRETDENSE mix is poured. In other words it is absolutely necessary to apply the CONCRETDENSE mix while the floor is still wet in order to secure the bond.

FOR PATCHING: Chip out the concrete to a depth of at least 2" at the edges which must also be the minimum depth of all portions of the patch. The edges must be chipped vertically or straight down in all cases. The CONCRETDENSE mixture is then placed and the same procedure is used as a resurfacing installation. That is, saturate the patch thoroughly with the CONCRETDENSE wash, make a stiff mortar in accordance with the mix specified and place it. Then tamp and trowel same.

Engine bases built with Concretdense have greater strength.

TAMPING AND TROWELING: In order to produce the best results it is recommended that the CONCRETDENSE be tamped in all cases and troweled the same as ordinary concrete to produce the smooth surface, but in no case should this troweling be done any longer than is necessary. CONCRETDENSE causes the concrete to set more rapidly, hence it is advisable to govern your curing accordingly.

CURING: All installations should be cured the same as ordinary concrete.

BEAUTIFUL NEW EFFECTS OVER *OLD WOOD FLOORS* with FLEXROCK

ARTISTIC USES FOR SEVEN STANDARD COLORS

Natural (White-Yellow)	Brown
Red	Gray
Green	Black
Yellow	

In addition to these colors, you may obtain other shades and tints, but no shade or tint can be guaranteed to perfectly match the sample which you ship for matching. The color experts will come as close as possible without guarantee of perfection.

Instructions for Applying FLEXROCK

1. Thoroughly clean the place where FLEXROCK is to be used, nail down metal lath, or if the floor is subject to heavy vibration, use a heavier expanded metal, nailing it about 4 to 6 inches. 1.8 expanded metal lath is recommended although you may use chicken wire, preferably 1½" 16 gauge.

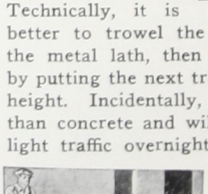
2. You should meet a beveled wood or iron strip about ⅜" to ½" thick where FLEXROCK joins open floor areas. Of course, where you butt a wall, you simply trowel the material right up to the wall, and in some cases even make a cove base, if desired. The beveled wood strips or iron strips should be beveled on the opposite side from where FLEXROCK meets it so that trucks can easily run up on the new area. Use hard wood, if possible. Try to keep FLEXROCK at least ⅜" thick.

3. Roll the drum of liquid into the job, so that the liquid is well stirred.

4. The heavier material in the dry FLEXROCK may have settled to the bottom in shipment. If this has happened, it is best to dump the full container out into the mixing box, mix it good and replace it into the container.

5. Mix together two parts FLEXROCK LIQUID with one part plain water. Measure accurately.

6. MIXING—Dump the amount of dry material that you expect to use immediately into the mixing box or on to a clean dry floor that you may use for mixing. Add sufficient solution (paragraph No. 5) to make a mortar of STIFF consistency. Place with a float and trowel, making sure to get it down solidly. Technically, it is better to trowel the material hard into the metal lath, then follow immediately by putting the next trowelful to the proper height. Incidentally, it sets much faster than concrete and will be ready for very light traffic overnight.



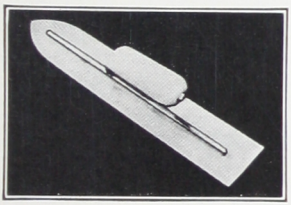
7. In screeding FLEXROCK, it is recommended that you use ⅜" screed strips over 1.8 thickness metal lath and

INSTALLING FLEXROCK

place them perhaps three or four feet apart. Hold your screed board diagonally or at about a 45° angle so that as you pull it along, the FLEXROCK is forced under the board and will not drag. In the case of screeding concrete, you hold your board perpendicular and see-saw across. In the case of FLEXROCK, you should hold it on an angle but see-saw it across just the same.

8. After screeding, floating and troweling, you should come back in about a half hour and trowel again. This will give you your smooth finish.

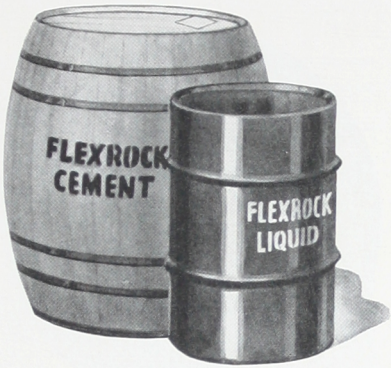
9. In warm weather, turn your traffic over it in 15 hours—colder weather makes it take longer to dry, damp weather has the same action as cooler weather.



TROWEL FOR ASSURING PERFECT RESULTS. One of these special made, high-grade steel trowels is given free with the first single 500 lb. barrel of FLEXROCK. You will notice that this trowel has a semi-rounded nose with exactly the right curve to entirely eliminate trowel marks even used by a novice.

Notice: Do not use FLEXROCK under severe oil conditions, water conditions, or where chemicals are involved, or outside under weather conditions where there is no roof over it.

Diagram at right shows you how to nail your expanded metal lath and then place a wood strip so that you may run on to the installation and off it. Either hard wood or metal should be used after the metal lath and strip is placed, simply install FLEXROCK according to regular instructions.



WOOD AND CONCRETE

FLEXROCK presents a hard, firm, smooth surface similar to concrete—yet, it will not sand off. It is also light in color like cement.

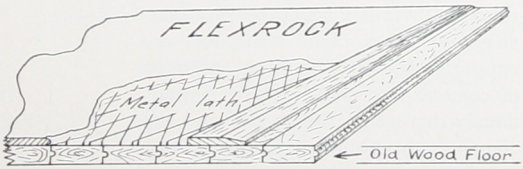
FLEXROCK has all of the flexibility and toughness of wood—it is also warm to the feet, but it will not split, splinter, warp nor crack, neither does it have joints to become filled with dirt.

This material weighs only 3 pounds per sq. ft. after application, which is sufficiently light to be negligible insofar as floor loading capacities are concerned.

FLEXROCK may be washed and scrubbed daily without injury. It provides the ideal solution to the old split and splintered wood floor problems.

COVERAGE—2 lbs. per sq. ft. 3/8" thick. Shipped in 500-lb. barrels.

SHIPPING WEIGHT—FLEXROCK is shipped in 500-lb. wooden barrels similar to sugar barrels. It is also accompanied by a 300-lb. steel drum of FLEXROCK LIQUID. These two materials added together, with some dilution with water, form a magnesium oxichloride cement. Shipping weight of a 500-lb. barrel is approximately 850 lbs., including the free liquid.



End Installation with Wood Strip.

FLINTCRUST for Enduring Concrete Surface Treatment

Will the "Sands of Time" permit your concrete floor to be permanently efficient?—or will they destroy your concrete floors rendering them "Another headache?"

To render concrete floors permanently efficient use FLINTCRUST.

FLINTCRUST is a crystalline substance to be dissolved in water only once, and flushed over concrete. This material must be kept dry before use.

When FLINTCRUST, dissolved in water, is flushed over a concrete floor it penetrates the pores, contacts the free lime and forms a "dead" "glass-like" crystal which cannot be redissolved. Obviously this takes the exact shape of the void or air space, and supports the surrounding particles of cement and sand, thereby tremendously increasing the service and efficiency to be obtained from the floor as well as preserving the floor itself and preventing the development of those rough, worn and broken places that cause inestimable damage.

To apply FLINTCRUST under ordinary circumstances, 3 applications are required. We recommend these applications as follows:

First application, dissolve 1 lb. FLINTCRUST per gallon of water.

Second application, dissolve 1½ lbs. FLINTCRUST per gallon of water.

Third application, dissolve 2 lbs. FLINTCRUST per gallon of water.

DIRECTIONS: Flush the solution over the concrete floor and sweep it as far as possible over the area to prevent "puddling." Apply each application after the preceding one has dried.

FLINTCRUST is exceedingly simple to apply. In fact the material in itself, its action, value and application are all so simple that it is hard to write enough about it even for explanatory purposes.

COVERAGE: One pound FLINTCRUST will cover 25 to 30 sq. ft. (three applications.)

SHIPPING WEIGHT: 400 lb. barrel; 109 lb. fibre drum; 57 lb. fibre drum.

GLASFLEX

ACID-RESISTANT
ALKALI-RESISTANT
FIRE-RESISTANT

GLASFLEX transforms dingy, dirty old floors into sparkling, new, efficient appearance. It is very easy to keep clean and does not spot, or stain easily.

GLASFLEX is the resinous lacquer which will penetrate old wood floors and replace the dried sap, life-blood of the wood. Likewise, when placed over concrete, it fills the pores, protects and preserves the surface.

Test No. 1

Tests on GLASFLEX have proved it fire-resistant, acid-resistant, and alkali-resistant.

TEST No. 1

(a) GLASFLEX was poured on smooth, treated tin.

(b) It was then placed in a high temperature electrical oven and the moisture completely removed.

(c) The dried remaining film was removed from the smooth surface of the treated tin and had the appearance of a piece of glass or perhaps cellophane.

(d) This film of GLASFLEX was submerged in a test tube filled with concentrated suphuric acid.

RESULT:—The film was not affected even to the slightest degree.

TEST No. 2

The same procedure as in Test No. 1 was followed, but the film was placed in a test tube containing a 50% solution of sulphuric acid and water.

RESULT:—The film of GLASFLEX was not affected in the least.

Test No. 4

TEST No. 3

Exactly the same procedure was again followed as in the case of Test No. 1, except that the dried film was placed in a test tube containing an extreme alkali, a strong solution of sodium hydroxide.

RESULT:—film was not at all affected.

TEST No. 4

(a) A film of GLASFLEX was coated on concrete.

(b) After this film dried, penetrated the concrete, and presented the expected finished appearance, alcohol was poured on it.

(c) The alcohol was then ignited and the film permitted to totally consume all the alcohol present.

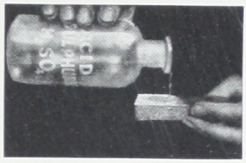
RESULT:—The GLASFLEX was not in any way affected by either the acohol in itself or by the heat of the film or by the film itself. GLASFLEX still retained its polish and showed absolutely no effect whatever.

TEST No. 5

This same block of concrete with the same single coat of GLASFLEX.

Sulphuric Acid was poured on the surface.

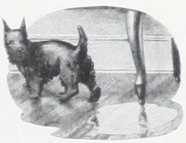
RESULT:—this test conclusively proved that GLASFLEX is alkali-resistant, fire-resistant, and acid-resistant.



Test No. 5

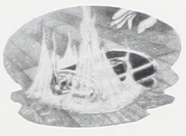
You may make these tests yourself and if GLASFLEX is not satisfactory, it may be returned for credit.

APPLICATION SIMPLE:—To apply GLASFLEX, you simply take a cloth or brush and apply it as it comes. Keep spreading it in a very thin coat in one direction. In some instances it may be desirable to apply several coats depending upon the abuse that it is to withstand.



On rougher work, GLASFLEX may be applied with a roofing brush, over a concrete floor or over a wood floor. It will seek its own level, penetrate the pores of a floor material, and present a gloss finish.

To get the best results, the surface should be perfectly clean before GLASFLEX is applied. However, this is not absolutely necessary where the preservation of wood, concrete, marble, linoleum, asphalt tile, or other surfaces is more important than an immaculate appearance.



In such places as railroad stations, subway stations, warehouses, factories, baggage sheds and other heavy duty floors, GLASFLEX may be applied with a roof brush, floor brush, or mop every three months, every year, depending upon the requirement necessary to preserve the floor at the greatest point of economy. GLASFLEX will outwear a thousand coats of wax.

COVERAGE:—GLASFLEX will cover 300 to 500 sq. ft. per gal., two coats, under ordinary circumstances and depending upon how porous the surface may be to which it is applied.

SHIPPING WEIGHT:—

55 gal. bbl.	442 lbs.
30 gal. ½ bbl.	250 lbs.
15 gal. ¼ bbl.	112 lbs.
10 gal. keg	86 lbs.
5 gal. pail	40 lbs.

FLEXROCK NON-SLIP WAX

Old style, inefficient, high polished waxes bring law suits, create falls involving serious injuries and react generally unfavorably in public places. Hotels, school boards, department stores, office buildings, factory offices, and even in homes only a non-slip floor wax should be permitted. The cost is no higher and the application of FLEXROCK NON-SLIP WAX is easier.

What FLEXROCK NON-SLIP WAX is:

FLEXROCK NON-SLIP WAX has been tremendously improved and is not equalled by any other wax or floor polish. It is a heavy duty, long wearing industrial wax which is so simple in application that even the housewife may enjoy its benefits.

FLEXROCK NON-SLIP WAX is a water wax which dries with a beautiful lustre, lasts from three to seven times longer than ordinary waxes and has an unequalled non-slip quality.

One of the underlying reasons for the unusual service and the better non-slip quality is the use of NEOPRENE, a synthetic made by DUPONT, several times tougher than rubber.

This NON-SLIP WAX provides perfect satisfaction on either hard surfaces or soft surfaces (it is not limited to either one or the other as in the case of most waxes). It can be easily applied with complete assurance that it will stick and provide the results desired over these surfaces:

HARD SURFACES	SOFT SURFACES
Concrete	Wood
Terrazzo	Rubber Tile
Marble	Asphalt Tile
Concretdense	Linoleum
Flexrock	Cork
Ceramic Tile	Wood Blocks

An Inexpensive Luxury

The ease of application makes FLEXROCK NON-SLIP WAX most desirable.

It is simply applied with a cloth or mop—no rubbing—no polishing. All of this strenuous effort is avoided because FLEXROCK WAX develops its own gloss. It develops its lustre during the quick drying process. It is so simple in application that a six year old boy can obtain perfect results.

FLEXROCK NON-SLIP WAX

Gloss Without Skid

The gloss of a wax is the important part. You are interested in the gloss because it maintains an immaculate appearance. As most of us are judged by appearance — so, we judge by appearances. Thus, the clean storekeeper gets the most customers.

It does not necessarily follow that a glossy wax must be slippery. Quite to the contrary— FLEXROCK NON-SLIP WAX has an excellent gloss but is not slippery.

Easy to Apply

Simply apply FLEXROCK NON-SLIP WAX with a cloth, mop, or lambs wool applicator. If desired, it may be applied with a damp cloth—or simply pour a conservative amount on the floor and spread it with a cloth as far as it will go. Let it dry to attain its own lustre.

Strange As It May Seem

More wax will make the floor less slippery—less wax will make the floor more slippery. Use plenty of wax in order to prevent slippery floors.

In the case of soft surfaces like wood, rubber tile, asphalt tile, linoleum, cork and wood blocks, a smaller quantity of wax may be used because there is a certain resistance in the material itself and the abrasion on the surface is not so great.

In the case of concrete, terrazzo, marble, CONCRETDENSE, FLEXROCK, and ceramic tile, it is recommended that you use plenty of wax because the more wax you use, the better it preserves your surface and the neater it keeps your floor.

Protection for Your Floor

FLEXROCK NON-SLIP WAX puts a protective coat on your floor surface. It is a very hard wax, and as a result will outwear other waxes. The fact that it

Don't Use Slippery Wax

does outwear other waxes tremendously decreases your cost because it costs less per gallon than some other waxes, and lasts much longer.

The hardness also assists in better protecting your floors where they receive the most wear. Where your floors wear worst in the aisles, in the doorways, and to the files, FLEXROCK NON-SLIP WAX provides a "leathery" film. This "leathery" film prevents the scuffing abrasion of hard sole shoes from injuring your expensive floor.

Coverage:—1000 to 2000 sq. ft. per gallon, depending on surface.

SHIPPING WEIGHT:—

55 gal. steel drum	496 lbs.
30 gal. half drum	270 lbs.
15 gal. quarter drum	135 lbs.
10 gal. keg	90 lbs.
5 gal. pail	45 lbs.

FLEXROCK WAX REMOVER

FLEXROCK WAX REMOVER will take even the heaviest and dirtiest industrial wax from the floor very easily by following the above simple instructions.

Removal of Wax Imperative

The reason that the removal of old wax is imperative is because it provides longer life and greater endurance for the new wax. It also permits the new wax to prove its quality without being hampered by the original old wax which may easily turn a non-slip wax into a slippery wax. If you first remove the old wax, you are absolutely certain that the new wax is going to perform exactly as the manufacturer represents it.

If you ignore the advice to remove old wax from the floor first, you often condemn the new wax without giving it half a chance to prove its qualities.

Perhaps the reason few people have cleaned off wax heretofore is because it was such a difficult job, requiring scrubbing, scraping and working one's fingers to the bone. Now,—this problem is solved. There is no easier way to remove wax than by using FLEXROCK WAX REMOVER.

Coverage Capacity:—Approximately 400 to 600 sq. ft. per gallon.

SHIPPING WEIGHT:—55 gal. steel drum, 496 lbs.; 30 gal. half drum, 270 lbs.; 15 gal. quarter drum, 135 lbs.; 10 gal. keg, 90 lbs.; 5 gal. pail, 45 lbs.

Laborious work of scrubbing is eliminated with FLEXROCK WAX REMOVER. It is no longer necessary to apply the painful effort formerly required to remove old wax. One can easily enjoy all the advantages of a good wax by having a good, clean starting surface after preparing it with the greatest simplicity and ease.

Simply wet your mop with FLEXROCK WAX REMOVER and mop the floor where you desire to remove the wax. Following this, you simply clean your mop, dip it in fresh, clean water and rinse the floor. As the rinse mopping dries, your floor will be thoroughly clean of wax, dust, dirt and foreign matter.

IRON WATERPROOFING

IRON WATERPROOFING is the term commonly applied to a fine powdered iron treated with salamoniac for quick oxidation. To make an ironite cement, you simply mix this with Portland cement and sand.

If it is preferred to make a waterproofing solution, you mix about 50% Portland cement and 50% IRON WATERPROOFING, then keep stirring it up in a light soupy solution of water and flush it over a given surface. This is used on interior walls and is drawn into concrete, masonry, brick surfaces, etc. by the voids, thereby making a deposit and expanding, as a result of which it prevents water from coming through.

IRON WATERPROOFING comes in 100-lb. bags.

IRON FLOOR HARDENER

IRON FLOOR HARDENER is coarse iron filings also treated with salamoniac for quick oxidation. A good iron floor hardener must have the proper ratio of coarse and fine particles.

To apply IRON FLOOR HARDENER you must catch the finished concrete floor just at exactly the right time after it has taken its initial set.

You then throw the iron filings by handfulls from one side directly to the other parallel to one end. You then walk the parallel of a side, throwing the iron filings straight across, thereby crossing them. You then walk diagonally, throwing the iron filings to the side, thus throwing a diagonal through the two crosswise applications. Next, you walk the opposite diagonal again crossing your two parallels and your opposite diagonal. The average application should be 30 lbs. of iron floor hardener per 100 sq. ft.

Following this application the floor should be troweled thoroughly, preferably with a machine disc float.

With the final set, after the surface cannot be marred or harmed with water, the entire surface should be flooded so that it is saturated with water for a day or two and then the floor should be permitted to dry.

IRON FLOOR HARDENER comes in 100-lb. bags.

ROCKFLUX for WET Acid Resistant Floors

This product is a hard, brittle, water-tight cement. You simply mix water with it and apply it at least 1⅛" to 2" thick.

One hour after ROCKFLUX has set, it must be covered with wet bags, cloth or anything of the kind which will hold moisture and then it must be saturated for at least 24 hours if possible.

ROCKFLUX is installed similarly to concrete except that it must be applied with a low moisture content (very little water.)

ROCKFLUX cannot be used to a feather-edge. It must be at least 1" deep under any circumstances.

ROCKFLUX is shipped in 100 lb. bags.

FIRMFLEX for setting any semi-mastic in 20 hours

This product is a gypsum cement which will quickly react with any semi-mastic flooring material ordinarily used in conjunction with Portland cement.

Be guided by the following mixes for the following purposes:

PATCHING—

Mix No. 1—Feather Edge
- 1 part semi-mastic
- 1½ parts FIRMFLEX
- 3 parts coarse, sharp, washed sand

RESURFACING LARGE AREAS:

Mix No. 2—Heavy Hand Trucking
- 1 part semi-mastic
- 1½ parts FIRMFLEX
- 3 parts coarse, sharp, washed sand
- 3 parts ¼" or ½" crushed granite, traprock or other hard stone.

Mix all materials by volume.

FIRMFLEX sets a semi-mastic in about 16 to 20 hours. It makes it hard enough to withstand five to eight ton loads.

FIRMFLEX comes in 300-lb. barrels.

Used with RUGGEDWEAR, you would recommend 3 barrels of FIRMFLEX per 1 barrel of RUGGEDWEAR.

SIMPLE, LOGICAL SUGGESTIONS FOR GREATER ECONOMY

Occasionally one puts a material in the wrong place; where it was never intended to be used. If you follow the logical rules below, you should never run into trouble. After all, you wouldn't expect a headache tablet to cure a broken leg; and you wouldn't get in an iron lung to remove a corn, any more than you would put a corn plaster on your nose to cure a headache.

1—Never use any floor material mixed with Portland cement, for wet conditions, or under sharp cutting edges, such as barrels on chimes, if it is black in color. Never use it under severe oil conditions. *Note* — mixed with cement and black in color.

2—Under oil, barrels on chimes, and under wet conditions use a densifier (waterproofer) like CONCRETDENSE.

3—Under "barrels on chimes" never use any material less than 2" thick.

4—Never use hot asphalt floors under "barrels on chimes"—use CONCRETDENSE.

5—Always make an exception of Hydrochloric, Sulphuric and Nitric acids. Never use anything but hot asphalt under these three acids. And be sure you have a good hot asphalt, properly applied.

6—Under any dry condition (consider outside open air conditions a DRY condition) regardless of traffic volume or weight, use RUGGEDWEAR RESURFACER.

7—Whenever a floor is to be subjected to terrific shocks, unless you use RUGGEDWEAR, always use metal reinforcing to localize any breaks.

8—When you want to waterproof a floor put a fabric-asphalt roof on it, then resurface the floor according to the traffic you have.

9—On foundry gangways never look for a permanent repair. Look for the longest efficient service at the lowest cost.

10—On "pottery storage floors" use FLEXROCK—it will not stain pottery. On the traffic isles use RUGGEDWEAR.

11—Under food product acids and greases use CONCRETDENSE.

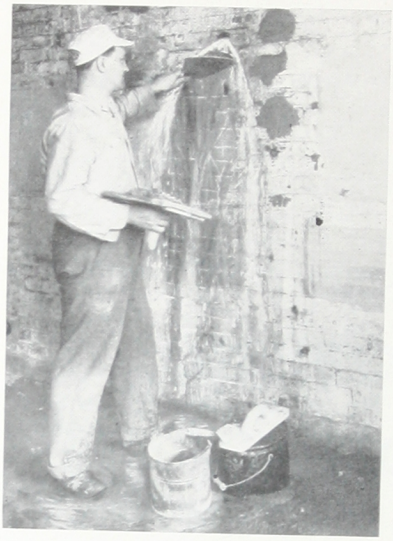
12—Never use any materials requiring *plain water* (use CONCRETDENSE) mixed with them in temperatures lower than 40° F if good results are to be expected.

13—In any concrete work use CONCRETDENSE for density, water proofing, fire resistance, light acid resistance, and, by all means, always use CONCRETDENSE when installing concrete in temperatures between 25° F and 40° F. Even then, protect it.

14—Follow the instructions in this book regarding the problem you have at hand.

LEAK-STOPPING, ROOFS & WATERPROOFING MATERIALS

HOW TO STOP LEAKS WHILE THEY ARE LEAKING



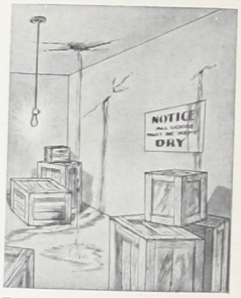
Repair cracks and holes against water pressure

Repair Cracks and Holes Against Pressure

Such a feat may seem miraculous. However, FLEXTITE has proven in innumerable instances that it does a perfect job of sealing leaks against water pressure.

If the cracks or holes in the wall present the only points at which water seeps or leaks, simply chip these out to a V-shape about 1½" to 2" deep. Mix fresh raw Portland cement with FLEXTITE just exactly as it comes and roll it into a carrot shape and force it into this opening against water pressure and hold it there for three or four minutes. It is advisable to place this ½" beyond the surface so that you may fill the top ½" with a cement and sand mortar mixed with FLEXTITE.

If the cracks in the wall run over a longer distance, you should cut a V-shaped channel the entire length of the crack and fill this in with FLEXTITE and raw Portland cement mixed together. This likewise should



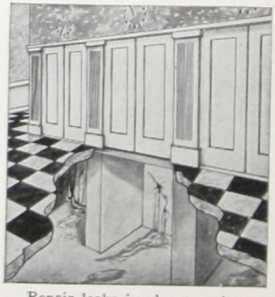
Repair leaks like this in walls

be done about ½" to 2" deep extending to within about ½" of the surface.

In either of the cases above, you should mix 1 part Portland cement, 2 parts coarse, sharp washed sand, and a solution of 1 part FLEXTITE with about 8 parts water to fill in the remaining ½" in order to bring your repair level with the surface of the wall. This top ½" also forms sort of a "key" and a "seal."

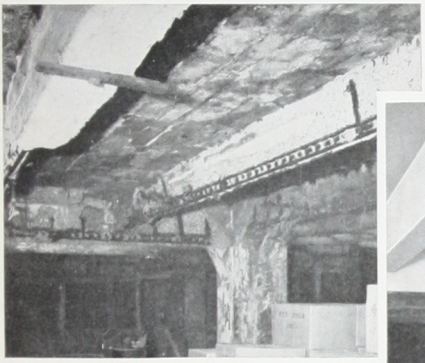
Waterproofing Concrete Slabs

If you are about to install a structural wall which should also be waterproofed, you may use FLEXTITE in a solution of about 1 part FLEXTITE with anywhere from 6 parts water to 15 or 20 parts water depending upon the exact results desired. This is not the primary use of FLEXTITE but it can be used for this purpose and will serve well.

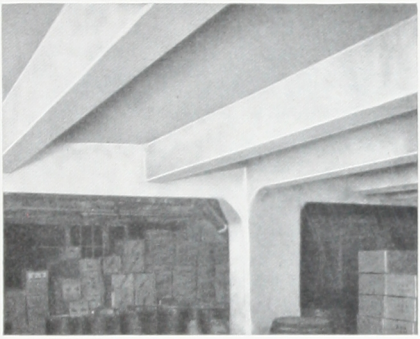


Repair leaks in elevator pits

PLASTER-COAT BEAMS, COLUMNS, WALLS and Make Them WATERPROOF



These photographs show how FLEXTITE makes it possible to reconstruct dangerous concrete beams.



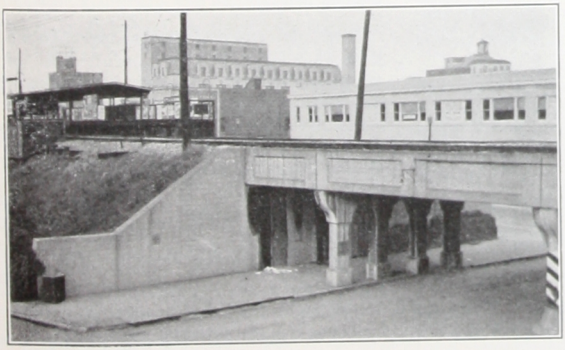
FLEXTITE DID THIS JOB!

First—all loose particles were knocked off. Then the corroded iron and concrete were brushed with a wire brush. Following this ROOFLEX PRIMER was used to prevent the iron rods from rusting again. Then FLEXTITE was used to set the concrete fast enough to avoid the use of forms and to rebuild the beams.

FLEXTITE is used for increasing setting time of Portland cement to anywhere from 30 seconds to 30 hours depending on the use and whether mixed with sand and stone.

Accelerating Set of Concrete

FLEXTITE may also be used for increasing the speed of setting concrete. If you want to install a slab of concrete tonight and use it tomorrow, you may do so by making a solution of FLEXTITE with anywhere from 6 parts water to 15 parts water depending upon the rapidity desired in setting the concrete slab.



FLEXTITE may be used for stopping leaks, accelerating concrete, and waterproofing concrete slabs but we do not recommend it for use in cold weather. It does its best work in warm weather.

FLEXTITE—HAS MANY USES

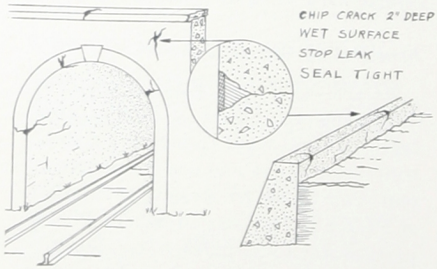
Plaster-Coating Walls

If your problem consists of a wall where water is seeping or where dampness comes through, it is recommended that you first wire brush the area to be treated.

If there is any oil, grease, or other foreign substances present, be certain that the wall is cleaned thoroughly and is free from such foreign matter.

Before attempting to apply FLEXTITE, you should be sure that the wall is thoroughly saturated. If it is wet as a result of the seepage, it is perfectly all right to go ahead with the job. If you are doing the work where the wall is dry, be certain that you soak it with water thoroughly for a couple of hours before applying FLEXTITE.

Any open cracks or holes should be repaired as explained heretofore before a plaster coat of FLEXTITE is applied.



Railroad tunnels, tunnels under rivers, under mountains, electric wire tunnels and tubes, swimming pools, reservoirs, retaining walls, city water works and other leaking concrete walls may be repaired with FLEXTITE.

The next step is to merely mix fresh raw Portland cement with a solution of 1 part FLEXTITE and 5 parts water. Then scrub this bond coat vigorously into the surface. While it is still wet, a plaster coat should be applied. This plaster coat should consist of 1 part Portland cement, 2 parts sand, and 1 part FLEXTITE diluted with about 10 to 15 parts water. Apply this to the surface the same as the average plaster in a thickness of about ⅜" to ½". You should place a second coat in the same manner to build up the total thickness not less than about ¾". Each coat should be allowed to dry before the next one is applied.

NOTE—Specific proportions of water with 1 part FLEXTITE are mentioned above. There is an exception to these proportions depending upon temperature, humidity, and the specific job involved. For this reason, use a pint milk bottle or some other measure as a unit for 1 part FLEXTITE, then start making tests by first adding 4 parts water, and if the mortar sets up too fast, add another part, or 5 parts water.

After determining the proper proportion according to your specific job, the temperature, and humidity by this trial and error system, you will have come to a definite proportion which can be used throughout the entire job for that particular day. The next morning you should again make tests. It is a very simple matter to determine the proportion of FLEXTITE and water in each case by this test arrangement.

In every instance possible, the neat cement and FLEXTITE applications should be covered with a plaster coat.

SEEPAGE and DAMP-PROOFING

Government projects such as dams, tunnels, retaining walls often require large quantities of FLEXTITE.

Precautions

Use rubber gloves in handling FLEXTITE. Always clean the vessel in which FLEXTITE is mixed before making another batch. Make exceedingly small batches because FLEXTITE sets very rapidly and it cannot be used again once it has set. You must clean the vessel each time to avoid using the old material over again which will ruin the new material.

Coverage

Approximately 150 sq. ft. per gallon per coat 3/8" thick or 75 sq. ft. including two coats 3/8" thick should be obtained.

Temperatures

FLEXTITE should be kept at all times above 40°. If it freezes or goes out of suspension, heat it to 150° and stir well. It will go back into suspension.

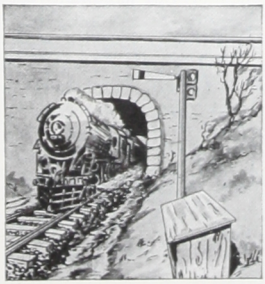
FLEXTITE is used in many odd waterproofing jobs. It may be used for stopping leaks or for moisture-proofing in such places as:

Cable Pits	Concrete Tanks
Swimming Pools	Retaining Walls
Dams	Elevator Pits
Bridges	Concrete Vats
Viaducts	Concrete Jetties
Tunnels	Concrete Beams
Concrete Pipes	Concrete Columns

And Walls

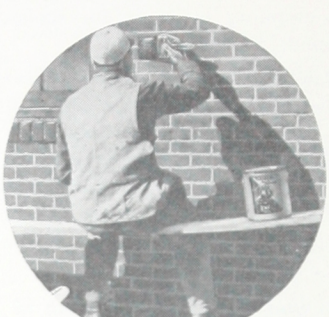
If you make an application of 1/4" or 3/8" plaster coat of FLEXTITE and it does not prevent the moisture from coming through, use a second coat. This crosses the grain and you will find that the moisture stops at that point. Sometimes, upon rare occasions, it is necessary to use three layers approximately 1/4" thick, each, so that the grain is changed twice. Each layer is applied exactly the same according to the foregoing instructions.

Water companies, public utilities, sewage disposal plants, and other types of industries use FLEXTITE regularly in addition to which thousands of other companies use FLEXTITE for occasional waterproofing.



Railroad tunnels are leak-proofed and plaster-coated with FLEXTITE

FLEXSEAL- Aeroplane Type Colorless Waterproofing



Leaks have caused water damage from time immemorial. Leaks through roofs, through basement walls, through mortar joints between bricks, between building blocks of all kinds, types and styles ruin interior finishes, drapes, and even furniture and floor coverings. Water finds its way through masonry walls and even through modern concrete walls.

In the majority of such cases you cannot use asphalt waterproofing. Roofing is the exception,—and perhaps foundation waterproofing may also be included among those problems that can be solved conveniently with asphalts of various kinds. However, EXPOSED WALLS do not lend themselves to asphalt waterproofing.

Outside brick walls, modern marble, granite, and limestone must preserve the appearance of the building. Even concrete, masonry, or the roughest type of stone factory wall would present a contemptuous spectacle splattered with an ugly black asphalt. Asphalt is obviously not the thing to use for waterproofing outside walls.

The ideal material for such a purpose must necessarily be transparent. It must permit the original surface, the natural appearance of the wall, to remain unmarred. It must do more than this,—it must preserve the surface regardless of whether it is made of concrete, granite, bricks, masonry, or other building materials.

FLEXSEAL is a transparent waterproofing which may be easily applied with a brush and absolutely accomplishes all of these ends.

FLEXSEAL is the type of transparent waterproofing used on aeroplane bodies. It is much more durable than the old style colorless waterproofings. The base of this new waterproofing is a cellulose nitrate dope. There is no wax to become dried out or to wear away, and no solvent to evaporate. FLEXSEAL does a permanent job.

Application Instructions

It is advisable to use a 4″ or 6″ regular paint brush. This spreads FLEXSEAL evenly and provides the easiest means of application for the workman.

An ordinary painter's scaffold can be easily used for reaching the areas beyond ordinary scope. In some cases perhaps a one-man swing may be employed.

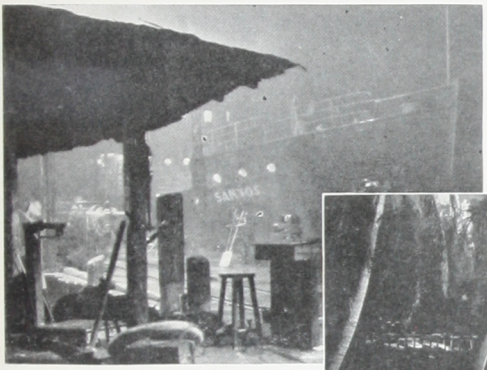
Any average workman can make the application. The janitor, the porter, a handy man or any workman picked from the ranks of the unemployed can easily brush FLEXSEAL on the outside surface of a building. The only requisite is to be able to dip the brush in the can and apply the material to the surface to be waterproofed. The only important point is to be sure that every area is covered.

COVERAGE—300 to 500 sq. ft. per gal., depending upon how porous the concrete, bricks, or masonry surface may be.

SHIPPING WEIGHT — FLEXSEAL is shipped in the following containers:

55 gal.	bbls.	—442 lbs.
30 gal	½ bbls.	—250 lbs.
15 gal.	¼ bbls.	—112 lbs.
10 gal.	kegs	— 86 lbs.
5 gal.	pails	— 40 lbs.

ROOF MATERIALS



The tropics really TEST waterproofing materials.

The greatest test for any roofing material is the variations of climate from the Tropics to the Arctics. FLEXROCK roofing materials have not only passed tests in both extremes, but they have been selected as preferable under both.

The above pictures are tropical scenes where ten barrels of FLEXROCK roofing were used for waterproofing the roofs of all the shacks, lean-tos, and other buildings. Lots of FLEXROCK roofing material is used in Cuba and Mexico under the terrific strain of a tropical climate.

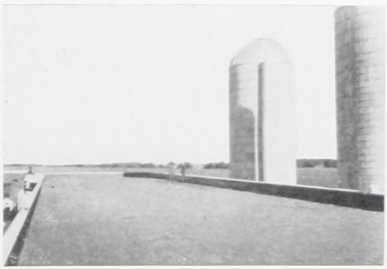
FLEXROCK roofing materials are also used in Alaska where the long, cold winters would "play havoc" with ordinary roofing materials.

Resulting from *outstanding quality*, FLEXROCK roofing materials are used by most of America's major industries. It is also used by manufacturers of "knock-down" barns, silos, and houses.

Perhaps the reason this roofing is so widely used results from the distinction made between "hard" and "soft" surfaced roofs. FLEXROCK makes two roof resurfacers or coatings. A penetrating one for "soft" surfaces and a non-volatile one for coating "hard" surfaces.

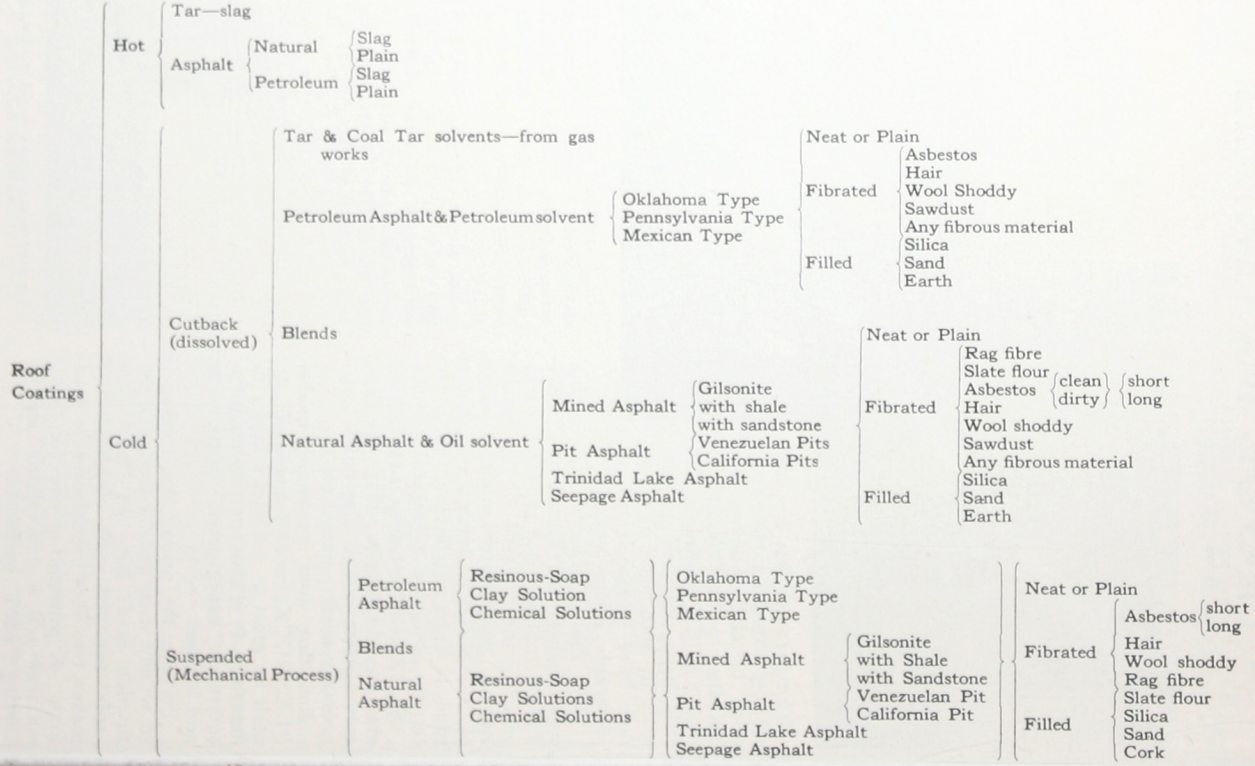
Soft surfaced roofs are easy to classify—Felt, Paper, Fabric, and soft compositions. Hard surfaced roofs include Tin, Copper, Asbestos, Tile, Corrugated Iron, and hard compositions.

You simply classify YOUR ROOFS and order material accordingly. It is very simple to assure yourself of the most satisfactory material. And to use the RIGHT material in the right place instead of guessing at it.



A central west dairy barn roof of FLEXROCK FABRIC and ROOFLEX

ANALYSIS OF ROOF COATING COMPOSITIONS



THE LOG

iace should ha
point asphalt
should not hav
low melting p
surfaced with
roll off.

Any level s
surface will be
factorily with
terials. It is
ever, to cover
layer of stone
them from the
Of course, mir
the best altho
pensive.

Felts, Fabri
should be coa
pbalt. The firs
etrating coat t
old felt—the s
should be ashe
in liquid or
"heavy" fillers
Metal, Tile,
hard surfaces
repaired with
pbalt for best

Record

Paper
Felt
Tin—Susp
FLAT: Concrete—
Fibrates
Asbestos—
Fibrated A

ROOF DISCUSSION

Recommended Use of Coatings Best Suited for Respective Roofs

FLAT

- Paper / Felt — Tar and Slag—Hot Asphalt or Cutback Asphalt
- Tin—Suspended Mineral Asphalt Neat
- Concrete—Suspended Mineral Asphalt—Fibrated Asbestos Cutback
- Asbestos—Suspended Mineral Asphalt—Fibrated Asbestos Cutback

Gable-Gambrel or lean-to or Arch Roof.

- Paper—Mineral Asphalt Cutback
- Shingle—Replace Shingles
- Tile—Suspended Mineral Asphalt Neat
- Felt—Mineral Asphalt Cutback
- Asbestos Slab—Suspended or Cutback Asphalt Asbestos Fibrated.

THE LOGIC—Any slanting surface should have a fairly high melting point asphalt to prevent running. It should not have any tar products with low melting points, nor should it be surfaced with stones—these would roll off.

Any level surface, or nearly level surface will be weatherproofed satisfactorily with low melting point materials. It is usually advisable, however, to cover these materials with a layer of stones or "slag" to protect them from the strong summer sun. Of course, mineral asphalt is always the best although a little more expensive.

Felts, Fabrics, and Soft Surfaces should be coated with cutback asphalt. The first coat should be a penetrating coat to renew the life of the old felt—the second, or further coats should be asbestos fibrated if applied in liquid or in plastic form. No "heavy" fillers are necessary.

Metal, Tile, Concrete and other hard surfaces should be coated and repaired with suspended mineral asphalt for best results.

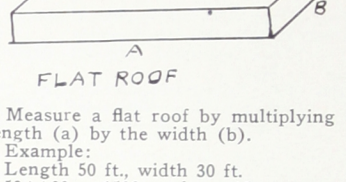
In cases where a membrane is desired over any type of roof (except shingles) either Jute Fabric or Cotton Fabric is recommended. The Fabric should be cemented on with Suspended Mineral Asphalt. The last coat should be Cutback Mineral Asphalt. This provides the best roof obtainable.

LONGLIFE—A suspended mineral asphalt neat or plain has a high melting point. It serves perfectly in any of the suspended Mineral Asphalt recommendations above.

ROOFLEX—A cutback (dissolved) mineral asphalt has a high melting point. It serves perfectly in any of the recommneded uses for cutback asphalt above. It is sold in three (3) forms:

1. ROOFLEX PRIMER—Neat—No Fibres—For penetration of felt and paper.
2. ROOFLEX LIQUID — 5% (Grade A) Clean Asbestos for general purposes.
3. ROOFLEX PLASTIC—20% (Grade A) Clean Asbestos.

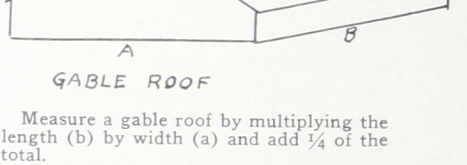
ROOF INFORMATION



FLAT ROOF

Measure a flat roof by multiplying the length (a) by the width (b).

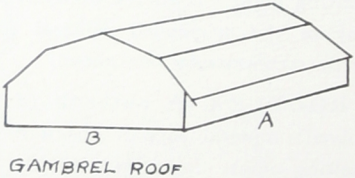
Example:
Length 50 ft., width 30 ft.
50 × 30 = 1500 sq. ft. or 15 squares roof surface.



GABLE ROOF

Measure a gable roof by multiplying the length (b) by width (a) and add ¼ of the total.

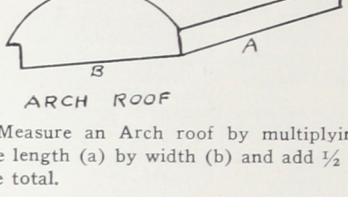
Example:
Length 50 ft., width 30 ft.
50 × 30 = 1500; ¼ of 1500 = 375
1500 plus 375 = 1875 sq. ft. or 18¾ squares.



GAMBREL ROOF

Measure a Gambrel roof by multiplying the length (a) by width (b) and add ⅓ of the total.

Example:
Length 50 ft., width 30 ft.
50 × 30 = 1500; ⅓ of 1500 = 500
1500 plus 500 = 200 sq. ft. or 20 squares.



ARCH ROOF

Measure an Arch roof by multiplying the length (a) by width (b) and add ½ of the total.

Example:
Length 50 ft., width 30 ft.
50 × 30 = 1500; ½ of 1500 = 750
1500 plus 750 = 2250 sq. ft. or 22½ squares.

To compute the area of a tank, multiply the height by the diameter and multiply that total by 3.1416 or 3 1/7.

Example:
Diameter, 20 ft.
Height, 50 ft.
20 × 50 = 1000
1000 × 3.1416 = 3141½ sq. ft. or 31½ squares.

To compute the area of a stack, multiply height by the average diameter and multiply that total by 3.1416 or 3 1/7.

Example:
Diameter of stack at top, 3 ft.
Diameter of stack at bottom, 6 ft.
Mean diameter, 4½ ft.
Height, 40 ft.
40 × 4½ = 180
180 × 3.1416 = 565.5 sq. ft. or about 5¾ squares.

THICKNESS OF FILM

In spreading any plastic or semi-liquid material over a surface, figure:

60	gallons	(or 600 lbs.)	to cover	100	sq. ft.	1	inch	thick
30	"	(or 300 lbs.)	"	"	"	½	"	"
15	"	(or 150 lbs.)	"	"	"	¼	"	"
7½	"	(or 75 lbs.)	"	"	"	⅛	"	"
3¾	"	(or 38 lbs.)	"	"	"	1/16	"	"
1⅞	"	(or 19 lbs.)	"	"	"	1/32	"	"
1	"	(or 10 lbs.)	"	"	"	1/64	"	"

The above is only accurate within one-twentieth of a part as installed—after evaporation the thickness will decrease but a perfect film will remain.

LONGLIFE PURE MINERAL ASPHALT

in Usable Form

What LONGLIFE Is

LONGLIFE is not a dissolved asphalt. It is a pure mineral asphalt unadulterated with solvents, chemicals, sludge or foreign matter, put into usable form. It is put into usable form by spinning it with water. More than 95% of roof cements sold are dissolved, and dissolving always lowers the melting point. By spinning LONGLIFE and suspending it in water, it is put into usable form without any of the disadvantages of heating, handling hot kettles, or the disadvantages of soot, fumes, or even the disadvantages of solvents which lowers the melting point, or the many other difficulties ordinarily experienced with roof cements. LONGLIFE will remain plastic from 300° F to 50° below zero. This is an advantageous quality rarely found in roofing materials.

In spite of the high melting point, the qualities of LONGLIFE are such that it is high in ductility. By this we mean that it will stretch or "give" with stresses and strains thereby eliminating the possibility of cracks, alligatoring, and drying out.

The advantages of LONGLIFE are:

No Fire Hazard

No Odor

No danger of handling hot materials

No running on hot days

No cracking on cold days

No Fillers to take up space for getting the product out at a lower price

Easy to use

Application may be made as roof coating, patching, low cost factory caulking, glazing windows, coating stacks, coating steel sash, and used in a spray gun as an acid-fume resistant paint.

LONGLIFE EXCELLENT

in Torrid and Temperate Climates

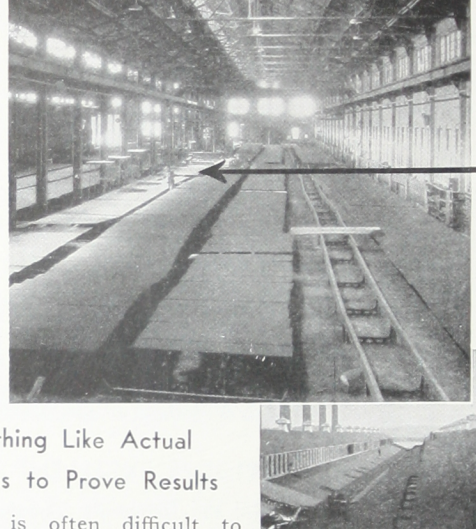
LONGLIFE is excellent in tropical climates. Under the torrid sun, it will not melt. This material is the best product in the world for repairing Spanish Tile, or for patching or coating any hard surfaced roofs.

LONGLIFE is also good for coating any sheet metal work such as corrugated iron, metal shingles, plain tin roofs, plain tin, metal structures, or anything of the kind on perpendicular surfaces as well as on horizontal surfaces.

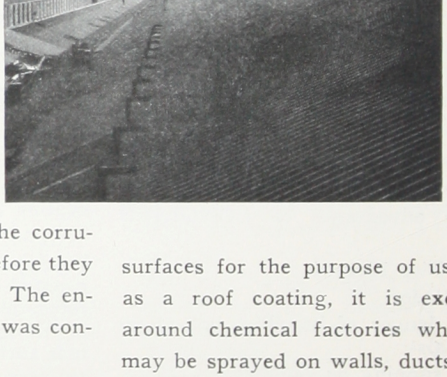
LONGLIFE comes in concentrated plastic form. It will not melt after it has been applied up to 300 or 400 degrees.

Results from the use of a number of barrels of LONGLIFE in Cuba, under the torrid sun, have proved the quality of LONGLIFE and they have proved that LONGLIFE can be used under conditions that you would not dare use ordinary roof coatings.

LONGLIFE A PURE ASPHALT IN USABLE FORM



Flow-Brush on Spray



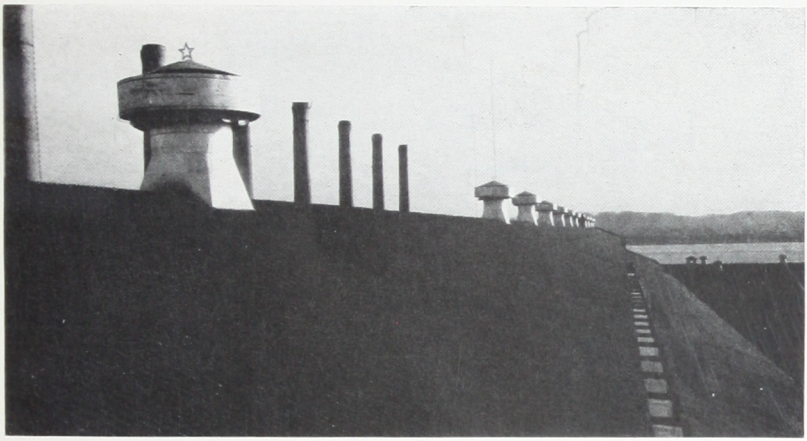
Nothing Like Actual Jobs to Prove Results

It is often difficult to paint or coat new galvanized corrugated iron. However, on the above roof, LONGLIFE was used for just that purpose. All of the corrugated sheets were sprayed before they were fastened on the roof. The entire roof was coated after it was constructed.

The result is hundreds upon hundreds of square feet of LONGLIFE roof. Yes!! It looks like almost miles and miles of LONGLIFE roofs over corrugated iron on several of the major industrial plants which have constructions similar to the one above.

Not only is LONGLIFE excellent for coating sheet metal and other hard surfaces for the purpose of using it as a roof coating, it is excellent around chemical factories where it may be sprayed on walls, ducts, ceilings, and all parts of the brickwork, concrete work, metal work, or any other of the kind to protect building surfaces from acid fumes. LONGLIFE is as near purity as can be obtained in asphalt furnished in cold form. It does a job equally as good as hot asphalt, but it is certainly much more convenient.

LONGLIFE A ROOF THAT WEARS BETTER THAN IRON



The Finished LONGLIFE Roof on Corrugated Metal

Longlife BEST for Hard Roofs

LONGLIFE is the best hard-surfaced roof coating because the asphalt is in elongated particles. These overlap each other and form a tight coating much the same as fabric like felt is formed.

In addition to this, however, the elongated asphalt particles weld together and form a homogeneous mass.

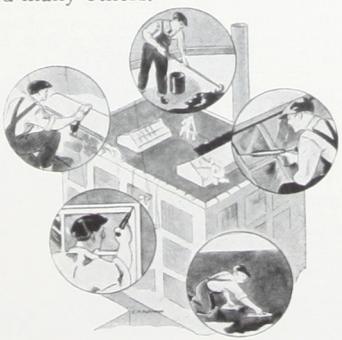
LONGLIFE has been tested in customers' chemical laboratories. These tests, microscopic in type, proved beyond all doubt that the elongated particles of asphalt make LONGLIFE far superior for roofing work over any metal or other hard surface.

It would seem that a material used for so many different purposes would not be perfectly efficient for any particular purpose. This is not true. Everyone knows that if it is possible to put pure mineral asphalt into usable form it can serve many purposes and serve them best.

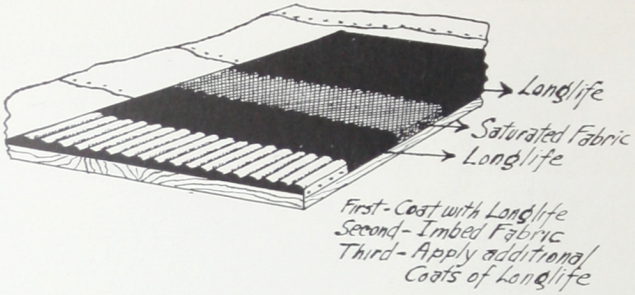
The purposes include:

Roof Work
Glazing
Caulking
Waterproofing
Cementing
Acid Fume Resistance
Insulation

and many others.



LONGLIFE THE APPLICATION ON A ROOF



APPLICATION OF LONGLIFE

First Coating

In this case, you simply add 10% to 30% water depending upon the consistency desired and stir the LONGLIFE and water thoroughly so that you bring your plastic LONGLIFE to a liquid consistency. In this form, you may use LONGLIFE with a brush or you may use it with a spray gun.

The best application is recommended as follows: Have a stiff bristled ordinary roof brush. Mix your LONGLIFE with water in 5 gal. pails, pour it on the roof and simply sweep it ahead as far as it will go. You may gauge the thickness of your application according to what you desire by adding the water accordingly. The more water you add, the thinner it will make LONGLIFE, as a result of which the coating of asphalt will be thinner on your roof.

Of course, you may always use it as a plastic, if desired, and place it with a trowel about $\frac{1}{16}$" or $\frac{1}{8}$" thick.

One of the big advantages of LONGLIFE is that you may place a coating at any thickness that you desire without fear that it will crack or alligator.

APPLICATION with COTTON FABRIC: In applying with Cotton Fabric, it is recommended that you cut the Cotton Fabric in 4 or 6 ft. lengths. Coat your roof with LONGLIFE where you expect to place the fabric. Coat the fabric with LONGLIFE and turn the coated side of the fabric down on the coated roof. Immediately follow, by coating LONGLIFE over the Fabric after you have placed the next piece of fabric and have made a lap properly of 4 inches. On top of this, you may place any number of coats of LONGLIFE that you desire, although two coats are all that are necessary. This means that there are four applications with Cotton Fabric.

APPLICATION with JUTE FABRIC: Inasmuch as there is no shrinkage in Jute Fabric and inasmuch as it has wide openings, you may simply coat your roof with LONGLIFE and roll your Jute Fabric into it without cutting the Jute Fabric in pieces. Over the Jute Fabric, you coat it again immediately and after this has dried, give it another coat. This makes a total of three coats with Jute Fabric. Joints should be lapped only two or three inches inasmuch as there is no shrinkage in FLEXROCK Jute Fabric.

FOR GAUGING THE AMOUNT OF MATERIAL NEEDED:

ROOFING SPECIFICATIONS	LONGLIFE PER SQUARE	FLEXROCK FABRIC PER SQ.	OPERATIONS
2 to 3 years	2 gals.	3 sq. yds.	One Coat
5 years	3 gals.	3 sq. yds.	1 gal. prime coat
		above for repairs only	2 gals. finish coat
LONGLIFE SPECIFIED ROOF			
10 years	4 gals.	120 sq. ft.	1 gal. embedding coat 1 gal. prime coat 2 gals. finish coat
20 years	7 gals.	120 sq. ft.	1 gal. embedding coat 1 gal. prime coat 5 gals. finish coat

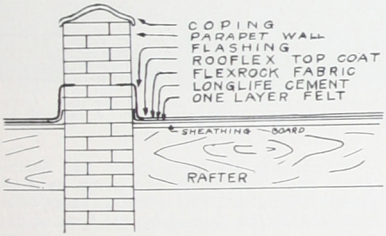
Be certain to apply a heavy coat over the patches, seams, joints, laps, flashings, valleys, gutters, etc. Be sure that the parapet walls are flashed securely and coated properly and also be certain that the flashings around skylights, chimneys, penthouses, and other raised surfaces on the roof are secure and well coated.

LONGLIFE TEN MINUTES' THOUGHT SAVES $1,000.00

A ten minute discussion of roofs will prove that the old ways are not only inadequate, but much too expensive.

We are all acquainted with the fact that a good roof must overcome several definite elements. These elements may be classified as follows: Contraction and expansion—heat and cold—wet and dry—smoke fumes, acids, and other minor elements.

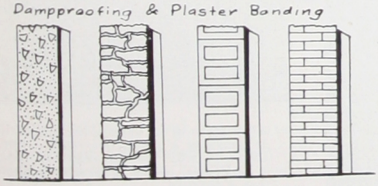
In the past, paper or felt has been used extensively and, of course, you can use



LONGLIFE may be used for setting coping, facing stone, and roof work. It may be used for a single unit waterproof coating.

your own judgment as to whether or not this material has been entirely satisfactory as a membrane.

When you use felts, paper, or other roofing membranes, the twisting of the building occasionally causes a split. Perhaps contraction and expansion in itself will cause one of these splits or tears. Obviously, regardless of what time during the year you begin to have difficulty with a roofing membrane, the March winds are almost certain to blow it into the next county.



On future construction LONGLIFE may be used from foundation to roof. Above sketches show LONGLIFE may be used for damp-proofing concrete, Stone Masonry, Tile and Brick Foundations.

With FLEXROCK FABRIC, it is a different story. This material may be pulled, stretched, tugged at, all with no effect. It is a tough cotton fabric thoroughly saturated. This pure asphalt preserves the cotton fabric, the same as the asphalt of the old days preserved mummies. With this combination, even though only one course is used, in place of six or eight courses of paper, you have a far superior job.

After it has been determined that FLEXROCK Fabric is the membrane to use, the next step is to analyze which coating is best to use in conjunction with this fabric.

LONGLIFE is the ideal material because it is a pure mineral asphalt unadulterated with solvents, chemicals, sludge asphalt or foreign matter. It is put into usable form by a mechanical process. It has no fibres, no inert filler, nor other foreign matter which smoke fumes and acid fumes ordinarily attack and cause "pinhole" conditions.

LONGLIFE will remain plastic at temperatures from 250 degrees Fahrenheit to 50 degrees below zero. Obviously, this combination is ideal for replacing the old-fashioned roofing materials.

Under actual tests this type of installation has proved more than 20 years' service.

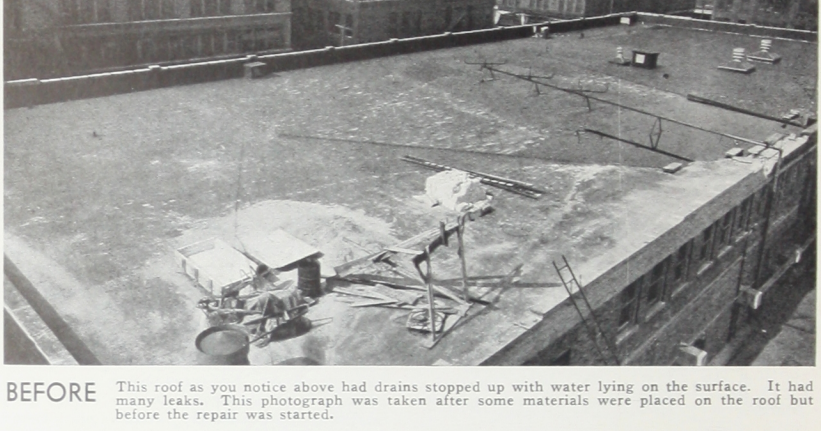
It is no wonder that America's outstanding engineers enthusiastically endorse this method. Many of them standardize upon this system—A LONGLIFE ROOF.

SHIPPING WEIGHT—

55 gal. bbls.	496 lbs.
30 gal. ½ bbls.	280 lbs.
15 gal. ¼ bbls.	137 lbs.
10 gal. kegs	96 lbs.
5 gal. pails	45 lbs.

ROOFLEX

Non-Evaporating Oils
Gilsonite : Asbestos : Asphalt



BEFORE This roof as you notice above had drains stopped up with water lying on the surface. It had many leaks. This photograph was taken after some materials were placed on the roof but before the repair was started.

FAULTY ROOFS

Thousands of dollars are lost annually as a result of FAULTY ROOFS! Leaks ruin merchandise, equipment, furniture and fixtures. The causes of these leaks are very easily traced to several definite elements.

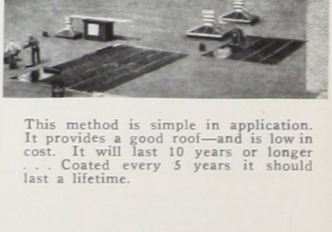
CHANGES OF TEMPERATURE

Heat and cold—wet and dry—smoke fumes carrying destructive acids—contraction and expansion — vibration — other minor elements affect the roof.

Every change of temperature has its effect on a roof. When warm temperatures develop, the roof expands—as cold approaches, the roof contracts.

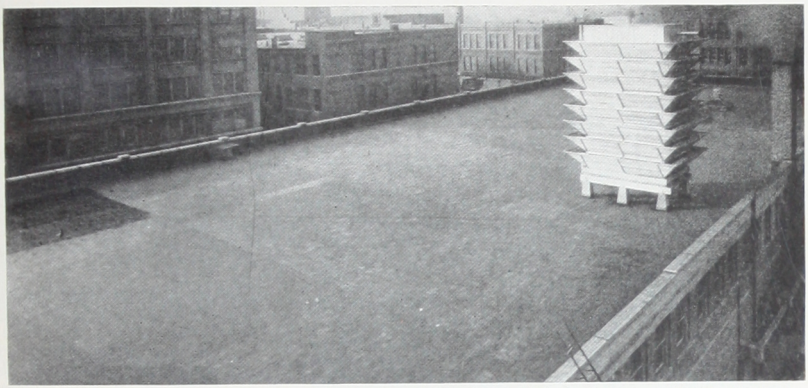
A roof has its laps, joints and seams. These laps and joints are often held together by nails. The constant expansion and contraction caused by the heat of day and the cooler night with the varying temperatures in between pulls at these joints and seams 24 hours a day, 7 days a week, 52 weeks a year. Is it any wonder a paper or felt roof leaks? Is it any wonder nails are pulled out of joints? Is it any wonder a paper roof blows into the next county with March winds?

In addition to this contraction and expansion, and the attendant damage wrought upon joints, laps and seams it must also be remembered that every factory district has its smoke and soot, carrying acids. These acids cause those pinhole conditions.



This method is simple in application. It provides a good roof—and is low in cost. It will last 10 years or longer . . . Coated every 5 years it should last a lifetime.

ROOFLEX — The Material that Renews the Life of Felt



AFTER The above photograph shows what an excellent job ROOFLEX really does. This installation was made with a Prime coat of ROOFLEX, FLEXROCK FABRIC imbedded in it, and ROOFLEX LIQUID over top.

QUALITY

This pure mineral asphalt tempered with Gilsonite and processed with Asbestos and non-evaporating oils is far superior to ordinary roof cement. It is the practical, permanent, inexpensive roof coating for slag—paper—felt—fabric and any other composition roofs.

ROOFLEX will expand and contract with the roof without splitting or tearing. It will not crack, alligator or run in the summer sun. There is no foreign matter in ROOFLEX to be attacked by acids—no "pin-hole" conditions. Its elastic nature makes it especially adaptable for flashing repairs and coping repairs.

ROOFLEX does a good job on tin, corrugated iron, and concrete roofs also; but it is especially adaptable to paper, felt, slag, and composition roofs. It is especially useful where a serious problem is encountered.

GIVES NEW LIFE

To OLD FELT and PAPER ROOFS

ROOFLEX will penetrate old felt, paper and other roofing materials, and put new life into them. It has a high melting point and therefore will not run in Summer. The low cold test also makes it ideal for Winter service.

ROOFLEX will form a seamless coat over your roof and permanently seal any leaks. It will permanently cure your roof trouble at negligible cost.

PATCHING COMBINATION

Your requisition may call for a barrel or half barrel "PATCHING COMBINATION." This will consist of a barrel or half barrel of ROOFLEX LIQUID, a small proportionate quantity of ROOFLEX PLASTIC, and a FREE brush for making application. The proper roofing materials will only be charged at the standard prices. This may also be purchased on trial.

ROOFLEX— Adds Years of Life to Many Old Roofs

EASY TO APPLY

ROOFLEX PRIMER and LIQUID are both easily spread with an ordinary roofing brush. ROOFLEX PLASTIC is easily troweled on by any ordinary workman. There is no difficulty encountered with ROOFLEX in any of its three forms.

ROOFLEX PRIMER is exactly the same as the liquid except that it is thinner and penetrating. It contains no fibre—no asbestos.

ROOFLEX LIQUID is the same as the primer with 5% Canadian Asbestos Grade A fibre.

ROOFLEX PLASTIC is the same as the primer with 20% Canadian asbestos Grade A fibre.

In the rain—or in the sunshine—ROOFLEX stops the leak before the damage is done and marks the spot ● while you know where it is.

There is no better roof coating than ROOFLEX even though it may cost twice the price. The cost of ROOFLEX is low and the application is simple.

TEN REASONS WHY

ROOFLEX is the best roofing material that can be purchased — regardless of higher prices of other roofs and roof coatings.

1. Absolutely Watertight.
2. Applied right over old roof.
3. Forms a seamless one-piece roof.
4. Decreases fire hazard because it will not support combustion—is fireproof.
5. Tough as Rhino Hide—won't crack or alligator—it is elastic.
6. Heat and Cold do not affect it—good in any climate.
7. Preserves a new roof—restores an old one.
8. Easier to apply.
9. Equal to 10 or 15 coats of paint.
10. It is the utmost in ECONOMY.

COVERAGE

ROOFLEX PLASTIC — The amount necessary depends upon the amount of patching there is to do. Estimate about a pound for every two square feet of patching. About 50 pounds is usually needed with each barrel of ROOFLEX LIQUID.

ROOFLEX PRIMER

Kind of Surface	Gals. per 100 sq. ft.
Gravel	2 to 4 gals.
Concrete	1¼ to 1¾ gals.
Paper and Felt	1 to 1½ gals.
Metal	¾ to 1 gal.
Compositions	1 to 2 gals.

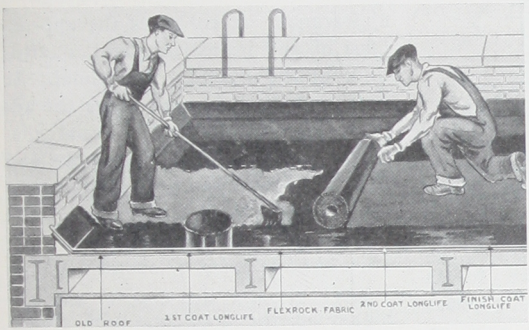
ROOFLEX LIQUID

Gravel (over primer)	1½ to 5 gals. as desired
Concrete (no primer)	1½ to 3 gals. as desired
Paper and Felt (over primer)	1 to 3 gals. as desired
Metal (over primer)	¾ to 2 gals. as desired
Metal (no primer)	1 to 1½ gals. as desired
Composition (over primer)	1½ to 5 gals. as desired

SHIPPING WEIGHT:—

55 gal. bbls.	496 lbs.
30 gal. ½ bbls.	280 lbs.
15 gal. ¼ bbls.	137 lbs.
10 gal. kegs	96 lbs.
5 gal. pails	45 lbs.

Fabric Membrane : Longlife : Rooflex Combination The Perfect Roof



Fabric and the Perfect Roof

FABRIC of two general types may be obtained, Asphalt Saturated Cotton Fabric on one hand and Saturated Jute Fabric on the other hand.

The SATURATED COTTON FABRIC is the more desirable for an extremely severe condition because it ordinarily has a much tighter grain and also because COTTON FABRIC is saturated more heavily with asphalt than JUTE FABRIC.

Both of these membranes have advantages under certain circumstances. For ordinary roof work, JUTE FABRIC is recommended because it provides a much lower labor cost and there is no shrinkage. JUTE FABRIC may be applied directly in the roll by simply coating the roof and rolling the FABRIC into the coating. You simply mop the coating over top of this JUTE FABRIC and the job is completed.

In the application of COTTON FABRIC, you first cut the FABRIC into 4 or 6 ft. lengths. This is because there is approximately 2″ per yd. shrinkage in all cotton fabric. In making the application, you coat the roof and you coat the FABRIC. Then you lay the coated side of the FABRIC on the coated roof and proceed to coat over top of the FABRIC again. All joints should be lapped 4″.

A Perfect Roof

The recommendation for a perfect roof is to first attach either SATURATED COTTON FABRIC or SATURATED JUTE FABRIC with LONGLIFE. LONGLIFE will not bubble nor cause any chemical reactions whatever. There are no solvents in LONGLIFE to be caged under the fabric, regardless of the weather conditions or the roof conditions.

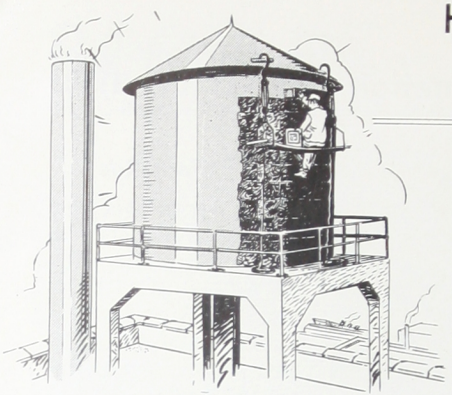
The next step would be to apply LONGLIFE as a coat over the FABRIC according to regular recommended applications with the final coat to be a single coat of ROOFLEX.

The above recommendation involves LONGLIFE, ROOFLEX and either JUTE or COTTON FABRIC. It is more difficult to sell three materials than two materials and for this reason most companies avoid this recommendation, preferring to recommend ROOFLEX and FABRIC on soft surfaced roofs, which always does an unusually good job, or LONGLIFE and FABRIC on hard surfaced roofs.

Where a paper or felt roof is involved, it is always necessary to make the first coat a saturating coat of ROOFLEX PRIMER. Then, of course, you would follow with either LONGLIFE or ROOFLEX, depending upon the proper judgment in the particular instance.

Hi-TEMPERATURE ALUMINUM

(1000° F. Max.)



Aluminum resists smoke fumes carrying acid and the elements better than any other protective coat on metal or masonry. FLEXROCK HIGH TEMPERATURE ALUMINUM does an excellent job on hot metal smoke stacks as well as on cold water tanks. It may be used with excellent success on masonry or concrete surfaces, bricks and stone walls.

It reflects heat and prevents it from penetrating roofs. In tropical climates tests have been made where Aluminum lowers the temperature inside of buildings as much as 8 to 12°. This is particularly true in metal buildings under the torrid sun.

It requires the most unusual vehicle to make a good ready mixed aluminum. Most aluminums which will stand 1000° will not dry under colder temperatures. Others that are recommended under cold temperatures will peel from the heat. This is not true with FLEXROCK ALUMINUM. It will withstand both extremes.

It is now recognized that aluminum does an equal or better job than red lead in preserving metal and at the same time, it eliminates the necessity of a second coat of paint. Aluminum presents a bright, shiny, immaculate appearance. It enhances the appearance of any industrial plant, institution, public building or school. It endures extremely well under the adverse conditions in industrial districts. It takes longer for smoke and soot to accumulate on aluminum to the point where it will make it look "dingy" than it takes to ruin any other type of paint or coating.

Even though the cost is slightly higher in the application of aluminum, most industrial plants recognize that the long endurance makes it ultimately much less expensive.

FLEXROCK ALUMINUM is not high in cost yet it does the best job. The quality of any aluminum coating depends largely upon the vehicle. The vehicle in FLEXROCK ALUMINUM is of the GLAS-FLEX type.

With and Without Aluminum

The coverage capacity is approximately 400 to 700 sq. ft. per gallon, depending upon the porosity of surface.

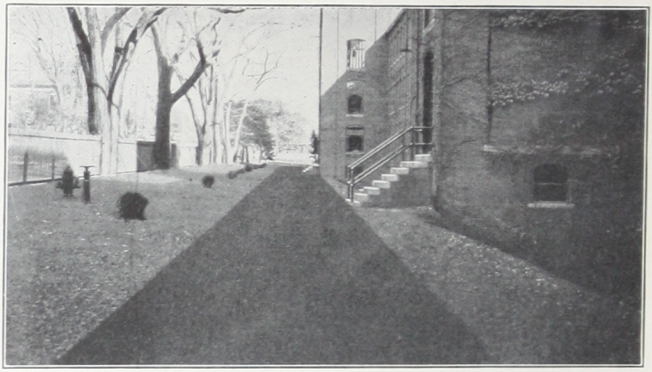
Note that two tanks on the same roof present a marked comparison because one has already been coated aluminum whereas the other still has that dirty, dingy appearance before aluminized.

Shipping weight—5 gal. steel pails —50 lbs.

MISCELLANEOUS PRODUCTS & DATA

PATCHROAD for Roadway Repairs

Simply Mix It With Stones—Tamp It in Place and the Job is Done



VERY SIMPLE INSTRUCTIONS

1. Simply mix PATCHROAD with ¼" or ½" crushed stone. Be certain stones are thoroughly coated but avoid excessive PATCHROAD.
2. Clean the place to be repaired, making certain it is 1" or more deep even at the edges, then paint it with PATCHROAD as a primer.
3. Shovel the PATCHROAD-Stone mixture into the hole and tamp it solid. It will be just as firm as you tamp it.
4. For economy use large stones in the bottom of deep holes.
5. Gasoline or Kerosene will prevent stones from sticking to tamp. Wash the tamp with it occasionally.

PATCHROAD

May be used either inside or outside if hole is minimum of one inch deep. No setting time required. Simply tamp into place and put into service immediately.

PATCHROAD is best suited for work during the summer and early fall months, although it will flow from the drum at any reasonable temperature convenient for the workmen.

Above 45 degrees it will work very well, but between 45 degrees and freezing we suggest that you keep and mix both PATCHROAD and the stones to be used with it inside where it is warmer and will work easier. PATCHROAD may be mixed with any size stones from ¼ to 2½", depending upon the depth of the hole and the economy you desire to effect.

It may be mixed either by turning it over with shovels, or if convenient it will be quicker to use a small concrete tumble type mixer.

FOR ESTIMATING

—For stone all of which will pass a 2½" circular opening screen, approximately one-half (½) gallon of PATCHROAD per cubic foot of stone will be required.

For stone all of which will pass a 1½" circular opening screen, approximately five-eighths (⅝) of a gallon of PATCHROAD per cubic foot of stone will be required.

—For stone all of which will pass a one-inch circular opening screen, approximately three-fourths (¾) of a gallon of PATCHROAD per cubic foot of stone wil be required.

—For stone all of which will pass a one-half-inch circular opening screen, approximately seven-eighths (⅞) of a gallon of PATCHROAD per cubic foot of stone will be required.

SHIPPING WEIGHT:—

55 gal. bbl.	501 lbs.
30 gal. ½ bbl.	285 lbs.
15 gal. ¼ bbl.	146 lbs.
10 gal. keg	90 lbs.

PLASTICSEAL for CAULKING

PLASTICSEAL is a plastic material which may be used for caulking cracks, and crevices around windows and doors, in brick work, in concrete and other places where dirt and other disintegrating agents may lodge.

PLASTICSEAL is furnished in many harmonizing colors, equally adaptable to artistic buildings and industrial ones.

PLASTICSEAL dries into a rubber-like consistency—firm, but plastic beneath the surface. It develops a tough leathery hide as a result of which colors will not "bleed" through when paint is applied over PLASTICSEAL.

A special manufacturing process "seals in" the oil binder. PLASTICSEAL is a "non-oil exudent" compound. It forms a perfect adhesive bond to any surface, but the binder does not exude to show an unsightly, oily, dirt-catching border that, in some caulking materials, spoils the appearance of first-class building materials next to which they are attached.

PLASTICSEAL will not become hard even over a long period of years. It is flexible and will perfectly withstand the severe test of contraction and expansion.

FUEL CONSERVATION

The conservation of fuel is very important to everyone from an economic standpoint. Cracks and crevices in buildings cause a tremendous loss of heat. Naturally, this directly reflects in the fuel bill.

In air-conditioned buildings these cracks and crevices likewise reflect additional expense as a result of warm air entering in summer time.

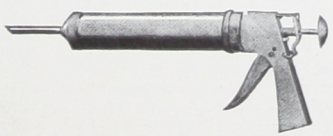
Notwithstanding the expense in dollars there are so numerous other considerations which are often considered paramount issues. For instance, drafts resulting from these cracks and crevices often cause colds and sickness.

Deterioration is another paramount issue! When these cracks and crevices are permitted to exist, dust, dirt, rain, freezing, thawing, snow, contraction and expansion are all getting in their handiwork. Deterioration is ever increasing with the inevitable havoc developing further and further until your building is actually dilapidated.

Weatherstripping and Caulking go hand in hand in reducing the cost of fuel, the expense of depreciation and in preventing sickness. Hundreds of engineers of important buildings throughout the country, including factories, public buildings, government buildings, hotels, institutions, office buildings, schools and other buildings, recognize the importance of using PLASTICSEAL.

SHIPPING WEIGHT:—

55 gal. steel drum	715 lbs.
30 gal. ½ steel drum	309 lbs.
15 gal. ¼ steel drum	195 lbs.
10 gal. kegs	130 lbs.
5 gal. pails	65 lbs.



With every barrel or half barrel you receive a new patented automatic caulking gun at no extra charge.

CLEANBRITE

The Paint Cleaner That Chases Dirt
CONVENIENTLY — ECONOMICALLY & EFFICIENTLY

Very little effort and negligible cost in cleaning paint. CLEANBRITE restores the original gloss at only a fraction of the cost of painting.

SHIPPING WEIGHTS
309 lb. Barrel
109 lb. Fibre Drum

COMPARE THESE FIGURES

COST of Paint for 1000 sq. ft.	$6.00
Cost of CLEANBRITE for 1000 sq. ft.	.30
Money saved per 1000 sq. ft.	$5.70

THE ISSUE CAN'T BE DODGED!

Every two or three years industrial plants and institutions have to "paint up" again. Investigation has proven that only about 10% of this expensive painting is necessary. 90% of painting, particularly interior, is caused by an accumulation of dust. Remove this film of dust properly and you restore the original lustre of the original paint.

NO DISTURBING ODORS —You may clean paint and restore the original lustre without disturbing office forces, patients, inmates, employees or without the inefficiency of "FRESH PAINT" signs.

OFFICE-PLANT-LOUNGE-DORMITORY

Any place where you have paint you have a potential saving.

ECONOMY—Save $5.70 per 1000 sq. ft.
SIMPLICITY—An easy job.
CONVENIENCE—No odor or inefficiency.

CLEANBRITE is not harmful to the hands. It is easy to use and the job may be entrusted to anybody.

Instructions

1—Simply mix about 1 lb. CLEANBRITE to each gallon of water. Stir thoroughly. Warm water is better than cold water.
2—Simply wipe the paint down with cloth or sponge saturated with the CLEANBRITE solution.
3—Rinse with clear, cold water with cloth or sponge.

FLOORNEW — Cleans and Bleaches Dingy Wood Floors

The ease with which FLOORNEW does its job is astonishing. It is simply applied to the surface of any wood floor with a mop, the same as any ordinary cleaner, but it not only cleans, but also BLEACHES the floor to its golden yellow, or original color.

If the floor is extremely stained with paint and oily materials of considerable age, for quick removal one may add about 50% caustic soda. This mixed with FLOORNEW will remove almost anything.

Of course, in using caustic soda mixed with FLOORNEW, one must be careful of one's hands. Use rubber gloves or perhaps the best practice is to use a long handled mop.

To remove dirt, varnish, oil and other discoloring substances with FLOORNEW, dissolve about two pounds per gallon of water. Make the solution stronger or weaker as required, according to the job to be done.

Then mop this over the floor, and keep mopping sufficiently to prevent drying for about twenty minutes. Do only three or four hundred feet at a time.

Following this treatment, rinse the floor well with plain, cool, clear water.

In all applications an ordinary mop is recommended.

FLEXROCK FLOORNEW saves thousands of dollars in expensive operations of scraping and sanding old wood floors. It does the job perfectly at a fraction of the cost.

SHIPPING WEIGHTS:

Barrel—425 lbs.
Fibre Drum—110 lbs.

CEMENT and AGGREGATE

CEMENT:—All Portland Cement referred to in this file should be fresh, live cement entirely free from moisture or any previous contact with moisture. Portland Cements are only slightly variable, whereas natural cements differ widely. This is the reason all of our specifications call for use of Portland cement, where ccement is a factor.

Before using even Portland cement, regardless of whether it just came from the supply house, squeeze a handful to determine that it is free from lumps, is live and fresh. This is easily ascertained.

SAND:—All sand used with RUGGED-WEAR RESURFACER, CONCRET-DENSE, or other FLEXROCK materials should be coarse, washed sand and very sharp. This can be determined by simply rubbing it between the fingers.

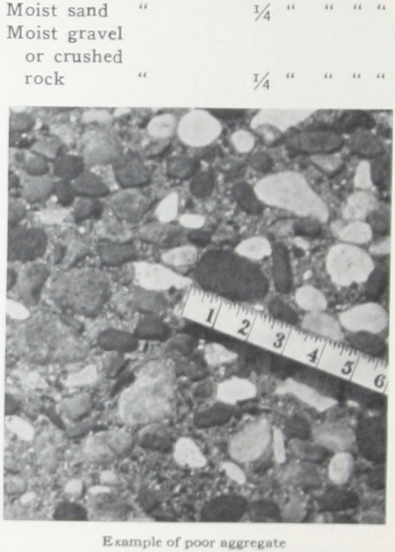
In the Middle West "Torpedo Sand" is very satisfactory if it is washed. In the East coarse "Building Sand" is satisfactory. These are merely local names of which there are a number throughout the country.

Fine sand, Silica sand, Bar sand and fine sands generally are objectionable for usual purposes because they are usually "dull" and very often contain "Loam."

To test the properties of a sand simply take a bottle and partly fill it with the sand. Then nearly fill it the rest of the way with water, and shake it thoroughly. After this let it settle. You will notice the washed sand at the bottom, and the loam will go to the top thereby giving you the proportion of foreign matter and loam in the sand, although this method cannot be considered accurate because the quantity is usually too small.

SURFACE WATER CARRIED BY AVERAGE AGGREGATES

Very wet sand	¾ to 1	gal. per cu. ft.
Moderately wet sand	about ½	" " " "
Moist sand	" ¼	" " " "
Moist gravel or crushed rock	" ¼	" " " "



Example of poor aggregate

STONE:—As pictured above is too smooth,—too irregular, and generally not satisfactory.

LIMESTONE:—In crushed form, as sand or as aggregate, is not satisfactory. No FLEXROCK Products should or can be used with best results associated with limestone because limestone is soft. It will crumble, dust and break thereby refusing to accept the loads to which FLEXROCK materials can otherwise very easily be expected to withstand.

COARSE AGGREGATE:—Upon most occasions we recommend crushed slag, trap rock, granite, or other hard stone. Occasionally where these stones are unobtainable, gravel will prove satisfactory if properly graded. We find, however, that the sharper surface of crushed stone provides better results.

A Treatise on Asphalt Emulsions

This is not intended to be a treatise using the nomenclature of the technician, but rather information that can be readily understood by the practical maintenance engineer.

Many engineers expect to purchase asphalt emulsions for the purpose of installing a floor, for using as a waterproofing material, for a roof cement, for caulking or for some other purpose and are disappointed in the results. The reason for this disappointment may be found in the type and kind of asphalt emulsion.

Asphalt emulsion is in the same category as the word "house." It might be a hotel, a brick house, a frame house, or a dog house. It is still a "house" and by the same token there are any number of different materials with the title "asphalt emulsion."

The most commonly used asphalt emulsions, and which are being actively promoted in the industrial field as "cure-alls" are generally constituted of three types—resinous soap, clay and chemical. To acquaint you briefly with the differences in the above mentioned types of asphalt emulsions, you will find that the resinous soap type may be of varied alkalinity and adjusted accordingly with other materials. The one predominantly used is that of the clay type, which has a serious drawback in that it cannot be used under continuous moisture conditions as it will gelatinze and soften and lose its serviceability. The chemical type of emulsion is sometimes used as a basic material for other purposes although when we speak of chemical types we include several different ones. There are a great number of emulsifying agents that can be used such as aluminum stearate, trisodium phosphate, and others in this classification of chemical emulsions.

After it is determined what type of emulsion is to be used, whether it be chemical, soap or clay with its attendant variations, there is still the question of whether or not the proper asphalt is available or whether the proper type of asphalt has been selected.

There are many variations of asphalts designated by their source and by their qualities. For instance, there are pit asphalts, lake asphalts, mined asphalts, seepage asphalts, petroleum asphalts and others. Then there is considerable variation in melting point, ductility, and penetration.

Petroleum asphalt varies according to several techniques of refining. It may be steam distilled, oxidized, or vacuum processed.

Natural asphalts are not all adapted to emulsification in their crude state. Not only must they be refined, but they must also be further processed and blended according to the results desired.

One asphalt is easier to emulsify than another and might vary considerably in cost. The sales price based upon cost may vary from 30c to $2.50 per gallon and still be legitimately priced.

For some purposes a lower cost material may even do a better job. In others it may be necessary to purchase material at a higher figure. The proper material for the purpose for which it is intended should form the basis of selection rather than price alone.

It is recommended in purchasing an asphalt emulsion that one rely upon the company with whom one is dealing. Perhaps the trade name of the material and the stability of the organization behind it is its best recommendation.

"FLEXROCK" THE WORLD OVER

Leads in the Manufacture of Building Maintenance Materials

Above is the area served with FLEXROCK materials for repairing floors, roofs, columns, beams, and walls (outside and in). Many difficult problems are solved.

C. G. Milner, General Manager, has just celebrated his 21st Anniversary in the Industrial Building Maintenance Industry. To his credit is recorded the personal supervision of more than 1400 installations over a period of eleven years, in every conceivable type of plant, in twenty-two states.

In 1933 Mr. Milner was made General Manager of FLEXROCK COMPANY (then a small, minor company). In the succeeding years, under his guidance, FLEXROCK has advanced to leading place in the industry. His theory for increasing and enlarging a business is "Make your products better, and prices lower, and your sales will take care of themselves."

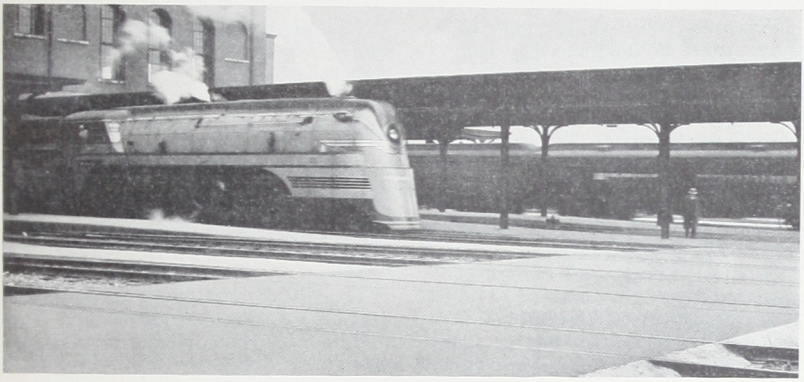
FLEXROCK materials are used by industry all over the world.

In a few short years the products of FLEXROCK manufacture have spread themselves all over the world. Such an accomplishment is only possible with good materials. Any product, to do this, must adequately, yes, *perfectly* serve its purpose to the complete satisfaction of the customer. Business can only be built by repeat orders—and repeat orders only come from satisfied customers.

The secret of the success of FLEXROCK COMPANY lies in constant research, improvement, and still greater improvement of product. No one can purchase any better materials for their specific purposes regardless of cost. Yet FLEXROCK MATERIALS are low in price and save more in factory operations than they cost.

STREAMLINED SERVICE—

FLEXROCK INSTALLATION AND ENGINEERING SERVICES—LIKE FLEXROCK MATERIALS (Grade crossing in front of streamlined train) ARE MODERN



Streamlined Service is modern just like the streamlined train, automobile or aeroplane. It is a separate and distinct unit acting independently so that it may be of most value to the customer. FLEXROCK COMPANY leads in this forward step.

Of course, FLEXROCK COMPANY is continuing and shall continue to send instructions (simple—so anyone can understand them—yet complete in every detail to assure perfect results) with every acknowledgment of order, every shipment, and every invoice. This gives every customer three (3) sets of instructions on the application of the specific product he ordered. Any one of these three sets of instructions provides every detail he needs—yet it is so simple that he has no worry.

FLEXROCK goes further than this, however. As explained above, one may obtain further service. At only a slight extra charge a customer may engage the services of FLEXROCK CONTRACTING COMPANY, Inc. This is a national contracting company, financially staple, with experienced men strategically located, to solve your application problem if you prefer not to handle it yourself. These men KNOW THE APPLICATION—they are not concerned with the manufacturing.

Unlike "Service Departments" within other manufacturing companies, or some sales agencies, where "free demonstrations" of products are made in your plant, the COST is not buried in the COST OF PRODUCT. You only pay for FLEXROCK service if you get it.

You also have the essential protection of full coverage of workmen's compensation and public liability insurance demanded by all large companies,—although sadly lacking in most "built in" service departments.

The FLEXROCK CONTRACTING COMPANY, Inc., located at 260 S. 23rd Street, Philadelphia, Pa., has no connection with FLEXROCK COMPANY. It does not even take orders for FLEXROCK MATERIALS except when accompanying application on complete contracts is involved. It does, however, offer the following services:

1—Complete floor or roof jobs on contract
2—Cost plus jobs (time and material)
3—Supervision of local contractor in applying FLEXROCK MATERIALS
4—Day labor of mechanic to install patches or complete installations
5—Man to supervise your own force

Obviously, this "streamlined" nationally operating, contracting company holds many advantages. There is no connection in organization, but we recommend them because their executives are FLEXROCK TRAINED. For estimates, recommendations, or further details write FLEXROCK CONTRACTING COMPANY, Inc., 260 S. 23rd Street, Philadelphia, Pa.

WRITE to Engineering Department on Special Problems

You may write to Flexrock Company, care of Engineering Department for information on any maintenance problem that you may have, with full confidence that you will receive a conscientious, honest opinion of the best method for solving your problem.

If the engineering department is not sure of a solution they try it out on the Flexrock Proving Ground. This is a building with the inside almost in ruin. It consists of about 5000 square feet of floor space. Flexrock engineers keep patching, installing and tearing out all kinds of materials on floors, walls, ceiling and roof. This is in addition to regular research work.

The long experience of some of the pioneers of this industry associated with Flexrock is further assurance of good judgment. This background is further supported by the professional opinion of technical graduate engineers associated with Flexrock Company.

The Flexrock Plant is the newest and best equipped to assist you with building maintenance problems. No charge or obligation is involved.

WRITE to Research Laboratory on Special Products

Your questions dealing with details of products out of the ordinary run should be directed to Flexrock Company, care of Research Laboratory.

Flexrock Laboratory is equipped with the necessary apparatus for determining the nature of building repair materials; and the experts of this laboratory are equipped to advise you where you may purchase such products in the event that Flexrock does not manufacture them.

Any information conflicting with patent rights will be withheld or given with this advice. No information is given for the purpose of legal argument—but merely for assisting plant engineers with maintenance products to fit their plant needs satisfactorily and economically.

Advice and information on products is given absolutely free of charge, without any obligation.

Product information for the purpose of reflecting ill-will to a competitor will not be given. Neither will Flexrock guarantee details of analysis. Neither will Flexrock become legally entangled in any quarrels as to product content or guarantees as between two other parties.

Flexrock Laboratory information and research is strictly for the assistance and advancement of modern industrial building maintenance and should be used for this constructive purpose only.

WRITE TO FLEXROCK COMPANY

on Anything in Connection with Maintenance of a Building

Every Major Industry in America and Many in Countries Abroad Use Flexrock Materials

NEW ENGLAND—

American Thermos Bottle Co., Norwich, Conn.
Lorraine Mfg. Co., Pawtucket, R. I.
Boston Envelope Co., Dedham, Mass.
New Britain Gridley Machine Co., New Britain, Conn.
American Steel & Wire Co., Worcester, Mass.; New Haven, Conn.
Boston Wire Stitcher Co., East Greenwich, R. I.
Tyer Rubber Co., Andover, Mass.
Underwood Elliott Fisher Co., Bridgeport, Conn.
Winchester Repeating Arms Co., New Haven, Conn.
Farrell-Birmingham Co., Ansonia, Conn.
Connecticut Light & Power Co., Waterbury, Conn.
Goodyear Rubber Co., Middletown, Conn.

EASTERN STATES—

Socony Vacuum Oil Co., Paulsboro, N. J.
United Wall Paper Factories, Inc., York, Penna.
Chester Hospital, Chester, Penna.
Chester Schools, Chester, Penna.
General Fireproofing Co., Youngstown, Ohio
Black & Decker Electric Co., Kent, Ohio
Timken Roller Bearing Co., Canton, Ohio
Queen City Textile Co., Allentown, Penna.
Nazareth Cement Co., Nazareth, Penna.
Clifton Coal & Supply Co., Cleveland, Ohio
National Carbon Co., Fremont, Ohio
Densten Hair & Felt Co., Philadelphia, Pa.
Frankford Arsenal, Philadelphia, Pa.
Philadelphia Gas Works, Philadelphia, Pa.
American Rolling Mills, Butler, Pa.
Jones & Laughlin Steel Co., Aliquippa, Pa.
H. J. Heinz, Pittsburgh, Pa.
Carnegie Illinois Steel Co., Clairton, Pa.
E. I. DuPont De Nemours Co., Perth Amboy, N. J.
Public Service Electric & Gas Co. of New Jersey, Newark, N. J.
Wickwire Brothers, Inc., Cortland, N. Y.
Gleason Works, Rochester, N. Y.

SOUTHERN STATES—

Carr-Lowry Glass Co., Wetport, Md.
American Smelting & Refining Co., Baltimore, Md.
Ox Fibre Brush Co., Inc., Frederick, Md.
Kampers Grocery Co., Atlanta, Ga.
E. I. DuPont De Nemours Co., Belle, W. Va.
P. H. Hanes Knitting Co., Winston-Salem, N. C.
United States Gypsum Co., Jacksonville, Fla.
A. C. L. Railroad Co., Jacksonville, Fla.
Searcy & Pfaft, Ltd., New Orleans, La.
Stockham Pipe and Fittings Co., Birmingham, Ala.
State of Alabama, Spiegner, Ala.
West Boylston Mfg. Co., Montgomery, Ala.
Armour & Co., Fort Worth, Texas
Hardwicke-Elter Gin Co., Sherman, Texas
Briggs-Weaver & Co., Dallas, Texas
Ralston-Purina Co., Fort Worth, Texas
Trinity Portland Cement Co., Houston, Tex.
American Snuff Co., Memphis, Tenn.
Missouri Pacific R. R. Co., Little Rock, Ark.
General Shoe Corp., Nashville, Tenn.
Soft Water Laundry Co., St. Petersburg, Fla.
Tampa Union Terminal Co., Tampa, Fla.

MIDDLE WEST

International Harvester Co., Chicago, Ill.
All-Steel Equipment Co., Aurora, Ill.
Meier & Pohlmann Furniture Co., St. Louis, Mo.
Illinois Central R. R., Paducah, Ky.
National Cooperage Co., Peoria, Ill.
Standard Brands, Inc., Pekin, Ill.
American Machine & Metals Co., East Moline, Ill.
R. R. Donnelly & Sons, Chicago, Ill.
Pullman-Standard Steel Car Co., Chicago, Ill.
John Deere Tractor Co., Waterloo, Iowa
Lake Shore Tire & Rubber Co., Des Moines, Iowa
Martin Roasa Tractor Co., Cedar Rapids, Iowa
Chapman-Price Steel Co., Indianapolis, Ind.
Chevrolet Muncie Division (General Motors) Muncie, Ind.
Anaconda Wire & Cable Co., Anderson, Ind.
St. Paul Union Depot Co., St. Paul, Minn.
Kelvinator Corp., Grand Rapids, Mich.
American Cyanamid & Chemical Co., Kalamazoo, Mich.
Northern Indiana Public Service Co., Goshen, Ind.

FAR WEST—

Douglas Aircraft Co., Santa Monica, Calif.
Sun-Maid Raisin Growers Ass'n, Fresno, Calif.
Lockheed Aircraft Corp., Los Angeles, Calif.
City & County of San Francisco, San Francisco, Calif.
Western Electric Co., Emeryville, Calif.
Chicago, Burlington & Quincy R. R., Casper, Wyo.
Texas Company, Cody Refinery, Cody, Wyo.

GUARANTEE TRIAL OFFER

Any FLEXROCK* material may be purchased on a trial basis This liberal form of GUARANTEE assures you of perfect satisfaction.

FLEXROCK will ship with a definite understanding that out of the material shipped you may use a reasonable portion for test and observation. If it does not prove entirely satisfactory you may request shipping instructions and return the remainder of material within 30 days—and all charges will be cancelled.

On the other hand, if you are well pleased with the results you may signify your satisfaction by merely honoring the invoice at only the regular price.

FLEXROCK COMPANY

* Except for colored FLEXROCK and other products obviously unreturnable.

MAIN OFFICE AND PLANT

FLEXROCK COMPANY

2300 MANNING STREET

PHILADELPHIA, PA., U. S. A.

BRANCH WAREHOUSES

Cleveland, Ohio · Chicago, Ill. · Los Angeles, Calif. · San Francisco, Calif.

WAREHOUSE STOCKS ABROAD

Toronto, Canada · Lahore, India · Havana, Cuba · Johannesburg, S. Africa

MAJOR BRANCH SERVICE OFFICES

FLEXROCK COMPANY
585 Boylston St.
Boston, Mass.
Kenmore 1218

FLEXROCK COMPANY
150 W. 42nd St.
New York City
Medallion 3-4407

FLEXROCK COMPANY
622 Highland Bldg.
Pittsburgh, Pa.
Highland 8060

FLEXROCK COMPANY
Toronto, Canada

FLEXROCK COMPANY
Euclid-61st Bldg.
Cleveland, Ohio
Endicott 3650

FLEXROCK COMPANY
549 W. Washington St.
Chicago, Ill.
State 3844

FLEXROCK COMPANY
564 Market St.
San Francisco, Calif.
Sutter 8556

ALSO REPRESENTED IN

Portland, Me.
Providence, R. I.
Springfield, Mass.
Newark, N. J.
Scranton, Pa.
Milwaukee, Wisc.
Des Moines, Iowa
Albany, N. Y.
Rochester, N. Y.
Baltimore, Md.

Richmond, Va.
Atlanta, Ga.
Memphis, Tenn.
Detroit, Mich.
Grand Rapids, Mich.

Cincinnati, Ohio
Toledo, Ohio
Columbus, Ohio
Indianapolis, Ind
New Orleans, La.

Dallas, Texas
Houston, Texas
Kansas City, Mo.
Charlotte, N. C.
Peoria, Ill.
St. Louis, Mo.
Minneapolis, Minn.
Los Angeles, Calif.
Seattle, Wash.
Washington, D. C.
St. Petersburg, Florida.

FLEXROCK COMPANY
2300 MANNING STREET
PHILADELPHIA, PA.